FRUIT AND VEGETABLE PROCESSING INDUSTRY

A DEVELOPMENT STUDY

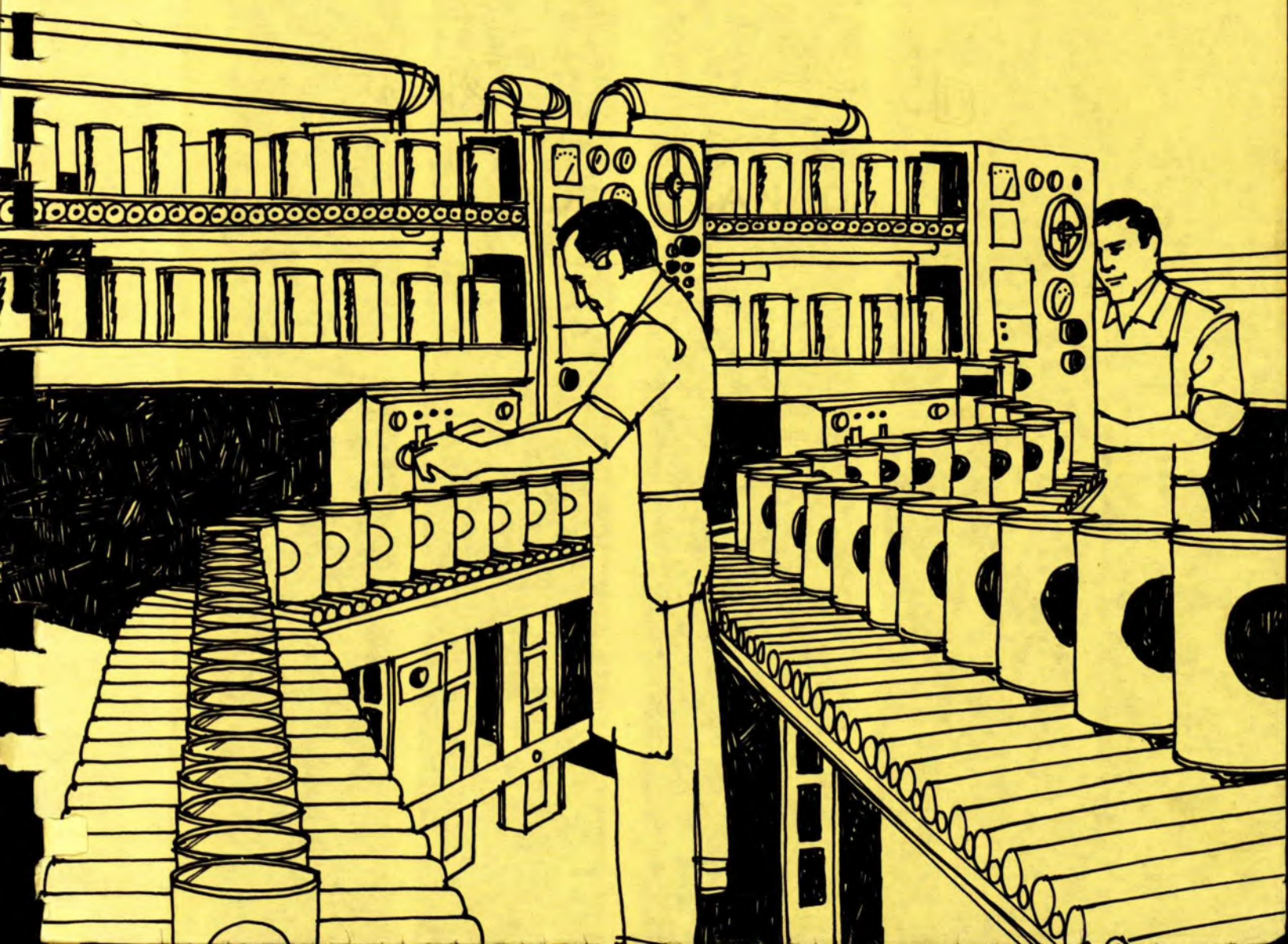
Prepared for
DEPARTMENT OF REGIONAL
ECONOMIC EXPANSION
By Warnock Hersey International Ltd.

Development study

Fruit and Vegetable Processing Industry

Atlantic Provinces

Volume 1
The industry and the market



FRUIT AND VEGETABLE PROCESSING INDUSTRY

ATLANTIC PROVINCES

a report prepared for

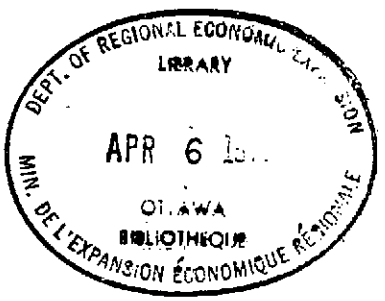
DEPARTMENT OF REGIONAL ECONOMIC EXPANSION
GOVERNMENT OF CANADA

by the

Economic Services Department

of

WARNOCK HERSEY INTERNATIONAL LIMITED
PROFESSIONAL SERVICES DIVISION



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FOREWORD

This report was prepared for the Department of Regional Economic Expansion by Warnock Hersey International Limited. The report discusses marketing and production possibilities for the fruit and vegetable industry in the Atlantic Provinces.

This report is being reproduced so that people in the fruit and vegetable industry may discuss the ideas presented. These ideas are the responsibility of the Consultants and do not represent the policy of the Department. Departmental officials appreciate the assistance that was provided by officials of the provincial governments in the Atlantic Region and people within the industry.

J.R. Lane
January 1, 1970.

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THE INDUSTRY AND THE MARKETS

INTRODUCTION

The major objective of this study is to appraise the potential for and assess the opportunities for establishing or expanding fruit and vegetable processing in the Atlantic Provinces. The industry studied is the processed fruit and vegetable canners and preserves as defined by Standard Industrial Classification No. 112, with specific reference to cole crops, peas, potatoes, apples, pears, strawberries, raspberries, blueberries and associated products. The study also concerns itself with the fresh fruit and vegetable industry as it affected the processing industry as a competing outlet for the supply of produce which might be used for processing.

The organization of the study has been guided by our belief that a preliminary understanding of the more general problems facing the industry in Canada and the Atlantic Region is a prerequisite to concrete solutions of more specific problems. In this respect, the report concerns itself with an analysis of production and marketing aspects of fruit and vegetable processing. The consultants have been careful, however, to relate all aspects of their investigations to the industry in the Atlantic Region. Considerable effort has been expended to place the industry of the Region in a Canadian perspective and, in many cases, analysis of opportunities within an international context was required to arrive at realistic conclusions and recommendations.

The report is presented in three volumes and four major parts. Volume I relates to the industry in the Region and examines such aspects as size, scale, inputs and economic significance of the industry. Within this same volume is information pertinent to the development of markets and the marketing of the processed fruit and vegetable products.

Volume II assesses product development opportunities and investigates such product aspects as production and marketing, marketing research, competition and markets. The final volume is an appendix containing statistical and background information relevant to the industry and an understanding of significant variables affecting industry conduct.

The consultants are grateful for the assistance and co-operation extended to them by provincial government officials and staff members who have provided information, advice and assistance. We are especially indebted to those members of the industry who have unselfishly relinquished valuable time to discuss their problems and ideas, and without whose co-operation this study would not have been possible.

Many segments of the fruit and vegetable processing industry in the Atlantic Region are passing through a most trying period in their development. We trust that this report will be of assistance to the future profitable and economically viable development of the industry in the Atlantic Provinces.

SUMMARY AND RECOMMENDATIONS FOR DEVELOPMENT OF THE FRUIT AND VEGETABLE PROCESSING INDUSTRY IN THE ATLANTIC PROVINCES

Development opportunities do exist for the fruit and vegetable processing industry in the Atlantic Provinces.

These recommendations for development of the industry are respectfully submitted and recognize that the processing industry generally must contend with a number of complex and difficult problems. For example, the industry is faced with ever-increasing costs and increased concentration of purchasing power in the hands of a limited group of buyers clamouring for lower prices. In addition, the industry is faced with increasing competition in the domestic and world markets for many products.

The industry itself is evolving with increased concentration in the hands of a few corporations who are frequently subsidiaries of major American corporations.

Devaluation of the United Kingdom currency has had a drastic effect on the profitability of the substantial market developed in that country by processors in the Atlantic Provinces for apple products and frozen vegetable items. Excess capacity exists in some plants for which markets have not yet been developed.

Three broad areas which offer significant opportunities for development of the industry include; market expansion; product development and research; and increased efficiency of production and marketing facilities.

MARKET EXPANSION

Increasing competition in world markets, reduced profit margins in traditional markets, and below normal growth of the regional market have forced the industry in the Atlantic Provinces to search out new markets and expand old markets for their products.

Indications are that penetration of the Central Canadian and North-east United States markets could be substantial and these two markets presently afford the greatest opportunity for profitable long term market expansion.

Moderately increasing income and standard of living will increase the regional market for frozen foods; however, because of the below average population growth forecasted for the region, growth of the market for frozen and canned foods will be less than in other more rapidly expanding Canadian areas and will allow little room for increased sales.

Market Expansion - continued

The fastest growing market for canned and frozen fruit and vegetable products is in Central Canada. Population increases and rising incomes will further expand the demand for frozen fruits and vegetables and convenience foods of all types in this market.

Regional processors with established markets in Central Canada will find potential for expansion through a broadening of their product lines and in the introduction of formulated convenience foods. Limited potential lies in the promotion of commodity canned and frozen foods, as the market for these products is competitive and profit margins low.

Some potential for development is tied to private label supply for major wholesaler-voluntary groups in Central Canada. However, competition for private label supply is intense and profit margins are minimal.

Transportation and tariff factors prevent the development of a market in the North-eastern United States for a number of products - especially frozen vegetables. Atlantic Region processors can be competitive in this market with a range of apple products and may be competitive on such items as pet foods, pickles, jams, jellies, and frozen small fruits.

Market Expansion - continued

We do not suggest, however, that Atlantic processors attempt to enter the United States market at the retail level under their own label. The price discount at which they would have to sell until a market franchise had been established would make sales of manufacturer's label merchandise a relatively unprofitable venture. Sales effort should be concentrated at the institutional-wholesaler level and at the retail private label level. Market conditions in the United States call for the use of food brokers to penetrate the food product market at the wholesale level, and such an approach is fundamental for United States market entry.

Tariffs, the lack of comprehensive transportation services and increasing competition from low cost producing countries limits the development of other world markets.

The following recommendations are made in regard to expansion of the market for processed fruits and vegetables from the Atlantic Provinces.

We recommend that:

a) A concerted effort be made by Atlantic Region processors to expand and develop the market in Central Canada and the North-east United States.

Market Expansion - continued

b) Regional processors with established markets in Central Canada expand in this market by a broadening of their product line, especially by the introduction of formulated convenience foods.

c) Efforts be made to develop private label supply contracts with major wholesalers and retailers in Central Canada.

d) Food brokers be used to penetrate the food product market at the wholesale level in the U.S.

e) Initial sales effort in the North-east U.S. be directed at the institutional wholesaler level and at the retail private label level.

PRODUCT DEVELOPMENT AND RESEARCH

The fruit and vegetable processing industry in Atlantic Canada is based on the potato and the apple - the potato is the mainstay of the frozen food industry, while the apple is the item of greatest significance to the canned food industry.

Large strides have already been made in the development and promotion of potato products by the industry and it appears that much of the development potential of potato products has been capitalized on already.

Product Development and Research - continued

Considerable development potential does exist for apple products. The immediate development of this as yet untapped potential is necessitated by the untimely loss of outlets for a significant portion of the apple crop. The fresh apple industry is hard pressed by increasing world competition and instability of traditional markets; the export pack of canned apple slices is facing greater world competition and reduced profit margins due to currency devaluations; and the domestic market for apple juice is being threatened by imports of apple syrup from low cost producing nations.

The industry in Canada may increase the utilization of apples, or at least provide an alternate means of apple utilization, by promoting the use of apple sauce.

Two products which have immediate potential as a profitable addition to the present line of apple products produced in Atlantic Canada are, "Spiced Apple Rings" and "Crabapples in Syrup". The major market for these products is in Central Canada at the institutional and retail levels. In-store surveys disclose that the market in Central Canada is now being supplied by processors located in Michigan and New York States.

Product Development and Research - continued

Little is known in Canada about those who comprise the market for apple sauce and apple products in general. The availability of such information would reduce the risks associated with the introduction of new products and may be the sparkplug which will foster the development of a range of new apple products and uses for apples.

Recent developments in "individual portion control" of apple products and food products generally, make this an area which should be monitored closely. Snack packs of 6- 6 oz. cans of apple juice and 6 to 9 oz. pop-top tins of apple sauce offer considerable development possibility, especially in the more affluent, convenience product oriented mass markets of Central Canada.

The recent successful marketing of re-constituted apple juice in Central Canada is an example of developments in technology which are reducing the cost of distribution of processed fruits and vegetables.

Developments in transportation cost reducing technologies should be followed closely by the industry. The adoption of dehydro-frozen apple slices by the industry and trade would reduce the cost of distribution, expanding the marketing area and increasing overall industry profitability on apple slices.

Product Development and Research - continued

Other products which offer development potential are asparagus and turnips. Turnips offer potential as a fresh item only.

An important area of product development is packaging and increased attention should be paid to this vital communicative aspect of the product, especially by the canning segment of the industry.

We recommend, therefore, that:

a) A concentrated effort be made by the Canadian apple processing industry, at the grower and processor level, aided by provincial or federal government bodies and agricultural agencies, to promote the use of apple sauce.

b) The canning industry in the Atlantic Region direct greater efforts towards product promotion and product development of apple sauce. The immediate widening of the apple sauce line through the introduction of product variations, such as McIntosh apple sauce, cinnamon flavoured sauce and apple-raspberry sauce, should be thoroughly investigated.

c) Systematic and professional product and consumer research be promoted by the industry in Canada to obtain information necessary for informed decisions on product development.

d) The production of asparagus be considered as an additional crop for certain areas within the Atlantic Region and a thorough investigation be conducted on the possibility of development from an agricultural and processing standpoint.

e) The establishment of a viable fresh turnip industry in the Atlantic Provinces follow these steps:

1. Development of a strong grower organization to organize and manage all marketing functions.

2. Establishment of a co-operative facility for storage, grading, washing, waxing and packaging.

3. Construction of a modern storage facility to reduce fluctuations in supply and to allow high quality stocks to be marketed when prices are firmer in the Spring and early Summer.

4. Encouragement of farm consolidation and farm mechanization to secure low unit costs of production.

5. Development of a strong quality image for Atlantic Canada turnips by adherence to maximum quality standards and by a co-ordinated advertising, publicity and promotion programme on both the domestic and export markets.

In general, the development of the fresh vegetable and small fruit section of the agricultural economy should be encouraged. There would appear to be excellent prospects for development of a large export market for fresh strawberries and raspberries if properly handled, and

the Atlantic Region is a net importer of many fresh vegetable products which could be grown locally.

With respect to the entire area of product development, the fastest growing sector of the food processing industry today is in convenience foods and formulated products. If Atlantic Region processors are to prosper and grow in the future, much more emphasis will have to be directed to product development in these areas. A rather humorous reminder of what the consumer of the future will expect in the way of food products is a conversation overheard by a prominent food marketing consultant and professor in the United States. The story runs as follows:

> "On a shopping trip the other day, I overheard a girl ask her father what the funny looking things were in that sack. He said, 'Why daughter, that is nothing more than the raw material out of which they manufacture instant potatoes.' "

INCREASED EFFICIENCY OF PRODUCTION AND MARKETING FACILITIES

There are two areas where increased operating efficiency from a production and marketing standpoint would benefit the industry in Atlantic Canada.

Increased Efficiency of Production
and Marketing Facilities - continued

Frozen food processors operating out of the Atlantic Provinces are finding it increasingly difficult to offer the type of service demanded by the major chains and wholesale voluntaries servicing the Central Canadian market. A central distribution and packaging facility to serve the market in Central Canada would generate substantial savings in the cost of packaging and distribution and would permit Atlantic Region processors to give service comparable to that provided by processors located close to the market.

Based on firm supply commitments from Atlantic Region processors, the establishment of a privately owned and financed cold storage facility would seem economically viable. The true economic viability of this venture should not be clouded by monetary assistance from provincial or federal government agencies. Some indirect assistance might be provided by government in the initial feasibility study; however, if a proper presentation of the benefits which might accrue to a public cold storage firm involved in this venture is made, the firm itself should be prepared to bear the costs of such a study.

We therefore recommend that the frozen fruit and vegetable processors in the Atlantic Provinces, in conjunction with provincial and federal government agencies, initiate a

proposal to a number of public cold storage firms to establish an integrated storage, packaging and distribution centre in Central Canada.

The freezing industry in Prince Edward Island is passing through a very trying period of development. The situation which has developed is a result of over-expansion by multiplication of facilities without an adequate assessment of market potential.

A programme for development of this important segment of the industry should stress the maximization of production efficiencies and the development of additional markets.

Consolidation of production facilities would result in substantial overall savings. Care must be exercised, however, so as not to endanger established outlets for the production from these plants.

If the production capabilities of these three plants were consolidated, it would appear reasonable to restructure production along the following lines:

a) Concentrate the entire production of green peas and french fried potatoes in one plant which would operate for a full 10 months each year.

b) Shift production of all other products to the second plant which would handle strawberries, beans, broccoli, cauliflower, brussel sprouts and other miscellaneous items, as well as any new products in the convenience food field.

c) The third plant, that formerly operated as P.E.I. Frosted Foods Limited, should then discontinue operation as a processing facility. The plant could be rented or sold to an experienced cold storage firm for use as a public cold storage serving all segments of the local food industry, including frozen vegetable processors who require additional storage for their products.

We recommend that the government of P.E.I. consider the option of increasing overall industry operating efficiency by a consolidation of existing productive facilities along the lines outlined above.

I

THE FRUIT AND VEGETABLE PROCESSING INDUSTRY IN THE ATLANTIC PROVINCES

ESTABLISHMENT OF THE INDUSTRY IN THE REGION

The processing industry in the Atlantic Provinces commenced in 1885 in the Annapolis Valley of Nova Scotia, in the era of the hand-soldered can. A number of fruit and vegetable items - peas, beans, strawberries, blueberries - were processed for sale on the local market. The M. W. Graves operations began in 1894 with the manufacture of apple cider and cider products. Very little commercial canning of other products was undertaken until the mid 1930's, when the United Fruit Company (Scotian Gold), and O'Leary and Lee, commenced operations on other fruit and vegetable products, followed by Canadian Canners (Aylmer) in 1935 at Middletown, N. S. The M. W. Graves Company also expanded operations during this period into a wide range of products. Annapolis Valley Canners Limited operated a number of plants in Nova Socita and have since acquired Campbell & Burns in Prince Edward Island.

Dehydration of a number of products was undertaken by certain companies during World War II. The largest producer of such products was Canada Foods Limited, which is today a subsidiary of M. W. Graves Ltd.

Establishment of the Industry in the Region - continued

Atlantic Region fruit and vegetable processing continued to be centred in the Annapolis Valley until the late 1950's. Prince Edward Island Frosted Foods commenced operations near Charlottetown in 1957. This same year also saw McCain Foods Limited, Florenceville, N. B., begin building what was to become the largest fruit and vegetable freezing operation of its kind in Canada. In 1961, Seabrook Farms commenced operations near Summerside, P. E. I., to be followed shortly by Langley Fruit Packers at Montague, P. E. I. These four firms operate in the frozen food industry.

The M. W. Graves Company has also commenced processing frozen fruits and vegetables with a plant at Canning, Nova Scotia. There are three other firms: C. McLean Limited of Springhill, Nova Scotia; Nova Scotia Blueberry Exporters from Halifax River, Nova Scotia; and Oxford Frozen Foods of Oxford, Nova Scotia, that have relatively new installations engaged primarily in the freezing of blueberries.

At present, the largest Canadian processor of apple products (Scotian Gold Co-Operative Ltd.), and the largest Canadian processor of frozen potato products (McCain Foods Limited), are located in the Atlantic Region.

EVOLUTION OF THE PROCESSING INDUSTRY IN THE ATLANTIC PROVINCES FROM A MARKET STANDPOINT

The fruit and vegetable processing industry in the Atlantic Provinces is composed of two major segments, canning and freezing. The development of these two segments took place at a different time and in a different manner.

1. The Canning Industry

The canning industry in the Atlantic Region developed many years ago, with its main growth taking place initially during the 1930's, followed by more rapid development after World War II. Generally speaking, there has been no dramatic growth in this segment of the industry. The main market for the canned products produced has been traditionally in the Atlantic Region, although a substantial market for certain apple products was generated in the United Kingdom. Sales to the market in Central Canada have been modest with no deep penetration into this market. While the industry enjoyed substantial sales in the U.K. market, sustained attention was not given to the development of a market in the North-eastern United States.

While the Canadian dollar was at par with the U.S. dollar, and for a short while at a premium, opportunities for development of

1. The Canning Industry - continued

a U.S. market were severly curtailed and understandably little attention was given to this market. Since 1962, the Canadian dollar has been at a discount which, in a number of ventures, effectively balanced out the modest import duty into the United States.

Economic conditions prevailing in the U.K. during the early 1960's resulted in a policy of aggressively trying to enter the European Common market. If this had been accomplished, it is quite possible that duties would have resulted for Canadian processed food products. Following this period was the ever present threat of devaluation, which eventually took place in 1967.

One might well ask why Atlantic Region canners did not pursue a policy of aggressive market development in the North-east U.S. while these ominous threats to their export trade in the U.K. existed. It would appear that the sporadic attempts to enter the U.S. market were tempered by the attitude that conditions in the U.K. would somehow be corrected and that traditional markets would be maintained.

2. The Freezing Industry

In contrast to the canning industry, the freezing of fruits and vegetables in the Atlantic Region has developed since approximately

2. The Freezing Industry - continued

1957. At that time, frozen foods were just commencing to gain a real foothold in the Canadian market place. The successful development of a frozen french fried potato gave strong impetus to the vegetable section of the freezing industry.

A high percentage of the frozen foods sold in Canada at that time were imported from the U.S. and carried substantial import duties. The time was most opportune for Canadian firms to enter this market. Only one Atlantic-based firm took advantage of this opportunity and aggressively exploited the situation with a high degree of entrepreneurial skill and resourcefulness. Over the short span of ten years, this firm became not only the largest fruit and vegetable processor in the Maritimes but also the largest frozen vegetable packer in Canada.

Other firms who established multiproduct frozen food plants in the Atlantic Region were based in Central or Western Canada and were primarily interested in widening their product line as well as establishing production facilities for frozen potato products. The latest entry into the multi-product frozen food industry in the area was that of a subsidiary established by one of the larger regional canning firms. Other operators in the frozen food field in the Atlantic area are primarily one product plants processing blueberries.

2. The Freezing Industry - continued

Entry into the frozen fruit and vegetable market was facilitated due to the lack of strong competition from national label packers. As a result of aggressive merchandising by the packers having Atlantic area plants, a very substantial share of the frozen vegetable market in Central Canada is serviced by either packer or private label products produced in these plants. This applies to both the retail and institutional markets.

The multiplicity of frozen food plants coming into production over a relatively short space of time has resulted in much greater productive capacity than is required for the domestic market, even though it continues to expand, primarily in frozen potato products. Overseas markets were developed by the larger processors and a substantial volume of frozen vegetable products have been exported to the U. K. market, with additional sales being made to other overseas areas. Devaluation in the U. K. market has drastically affected the profitability of sales into that area. As a result of this factor, combined with larger than normal crops of certain items, the domestic market has been under severe pressure from oversupply, resulting in generally depressed prices for the entire industry.

SIZE AND SCALE OF THE FRUIT AND VEGETABLE PROCESSING INDUSTRY IN THE ATLANTIC PROVINCES

1. Size of the Industry

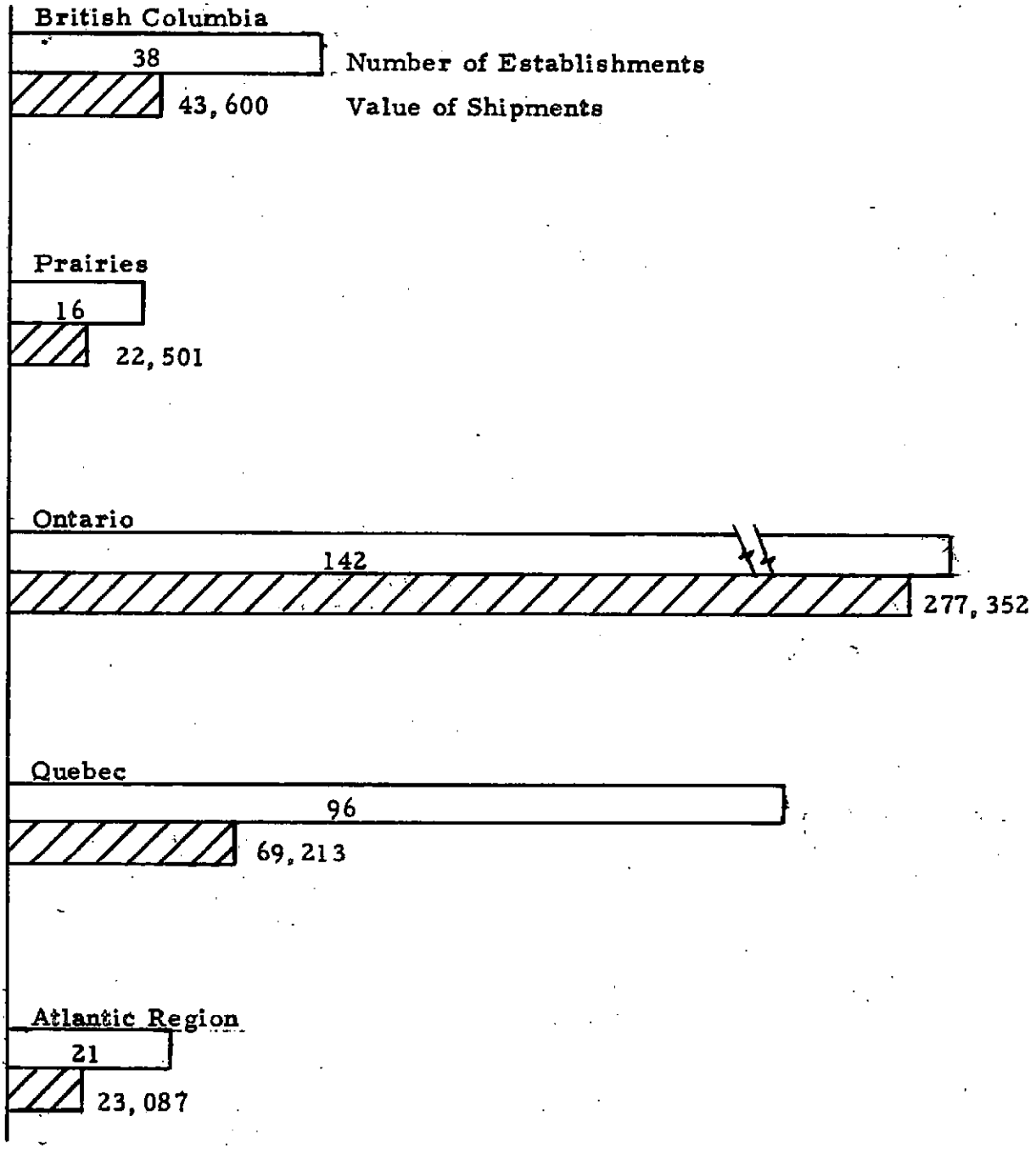
The fruit and vegetable processing industry in the Atlantic Provinces is small, relative to the size of the industry in other provinces, notably Ontario and Quebec. Figure 1 illustrates the relative size of the fruit and vegetable processing industry in major Canadian regions. The value added by manufacturing in the Atlantic Region was less than 5 percent of the total value added by the fruit and vegetable manufacturing industry in 1965; Ontario and Quebec represent 65 percent and 15 percent respectively of industry value added by manufacturing.

2. Scale of Enterprise

A very marked trend towards automation and advanced technologies in production, increased non-price competition in the marketplace, lower transportation and distribution costs, and a general increase in industry concentration have resulted in further competitive advantages to the large firm. The larger firms are better able to meet the high capital requirements of new production technologies and large

FIGURE 1

VALUE OF SHIPMENTS AND NUMBER OF ESTABLISHMENTS,
FRUIT & VEGETABLE CANNERS AND PRESERVERS, BY AREA, 1965



Source: Fruit and Vegetable Canners and Preservers, No. 32-218, D.B.S., Ottawa.

2. Scale of Enterprise - continued

promotional outlays, with delayed payback, required for efficient product differentiation and other forms of non-price competition. Economies of scale in plant operation are further enhanced by continually decreasing transportation costs, permitting wider distribution and increased profit margins. It is, therefore, important both from a production and marketing point of view to attempt to classify by size the Atlantic Region industry.

Because a simple quantitative evaluation of scale may berate the scale present in the production of specific items, a brief narrative description of enterprise size in the Region is first presented.

a. Freezing Plants

Multi-product freezing plants in the Atlantic Region range in size from Canada's largest vegetable producer (McCain), equal in size to the larger firms in the U.S., to a small plant such as that of Prince Edward Island Frosted Foods.

The other three plants in the Atlantic area (Seabrook, Langley and Graves) can be classified as medium-sized plants but, in total, do not have a sales volume equal to that of the largest firm (McCain). However, each of these plants would have a sales volume comparable to

a. Freezing Plants - continued

frozen food plants in Ontario, with the exception of York Farms, who handle a wide range of products.

The largest frozen food plant in Western Canada is that of Simplet-Carnation in Manitoba. This is strictly a potato product operation. Other frozen food plants such as Royal City Foods, Safeway and Fraser Valley, are comparable in size to the Atlantic area plants, excluding McCains.

The other frozen food plants in the Atlantic area are relatively small, single-product operations devoted almost exclusively to frozen blueberry production for the domestic and export market.

b. Canning Plants

Canning plants in the Atlantic Region range in size from Canada's largest apple product processing plant (Scotian Gold) to small operations such as Prince Edward Island Food Products Limited. Canning plants in the Atlantic area are basically apple processing plants, with limited production of vegetable items. There are four firms engaged in processing apples on a large scale: Scotian Gold Co-Operative Ltd., M.W. Graves & Co. Ltd., Annapolis Valley Canners Ltd. and Kent Foods Ltd. Two of these firms are subsidiaries of companies located

b. Canning Plants - continued

in Central Canada, Graves being controlled by Stokely-Van Camp and Kent being controlled by the Allen's organization. The apple processing facilities of these firms compare favourably with plants devoted to similar products in other provinces. The vegetable processing facilities inherent in these plants are quite small when compared to firms such as Green Giant, Libby, Aylmer, etc., operating in Ontario and Quebec.

The two canning plants located in Prince Edward Island can be classified as quite small, with limited production capacity.

c. Classification by Size

A quantitative evaluation of the scale of enterprise in the Region may be arrived at by using, as a base measure of size, a scale similar to that used by the Economic Research Service, United States Department of Agriculture. This measuring technique classifies plants according to the number of pounds of output for freezers and the number of cases packed by canners. These terms are generally used by the industry in discussing plant size or capacity. The choice of numerical values denoting the division between small, medium and large is quite arbitrary and the U.S. survey presents a convenient reference which has been employed in this case.

c. Classification by Size - continued

Scale Employed[1]

	Freezing Plants Annual Production	Canning Plants Annual Production
Small:	Less than 8.5 million lbs.	Less than 211,000 cases
Medium:	8.5 to 25 million lbs.	211,000 to 800,000 cases
Large:	Over 25 million lbs.	Over 800,000 cases.

Using this classification system for the major canning and freezing establishments in the Atlantic Region, the following size distribution is noted:[2,3]

Freezing Plants:[4]

Large: 1

Medium:[5] 4

Small: 4

Canning Plants:[4]

Large: 1

Medium: 2

Small: 6

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1 Study conducted by the Economic Research Service, U.S.D.A. for the National Commission on Food Marketing.

2 Average plant output, not plant capacity, is used as the basis for classification, unless otherwise noted.

FRUIT AND VEGETABLE PROCESSING AND THE ATLANTIC REGION ECONOMY

1. Introduction

One of the important features of an industry is the degree to which it is able to generate demand for the products of other industries. This phenomenon is known as linkage. An industry may encourage investment both in subsequent stages of production by forward linkage and in earlier stages through backward linkage.

2. Forward and Backward Linkages to the Local Economy

The establishment of certain primary processing industries can lead, through forward linkage, to a number of more advanced industries. Such is the case with forest industries which can spur

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[3] A list of the major processing firms is presented in Appendix H.

[4] Based on size of firms and not individual plant size. Many firms have one main plant where most processing is performed.

[5] Based on plant capacity. Possibly one plant only would remain in the medium category if present output was used as the criteria for classification.

2. Forward and Backward Linkages to the Local Economy - continued

the development of a large number of conversion industries, such as the manufacture of paper bags and sacks, stationery, boxes and cartons.

The fruit and vegetable processing industry as it exists in the Atlantic Region is weak in forward linkages. The best that the industry can do in this direction is the generation of certain sideway linkages through the use of by-products or waste products. Apple pumice and potato meal are used in the production of animal feed. Production of such products is quite limited and this sideway linkage is not significant.

The backward linkages associated with the fruit and vegetable processing industry are significant in the development of the regional economy. Among backward linkages are included; purchases of raw material from the agricultural sector and the employment generated at that level; demand for machinery, equipment, packaging materials, transportation services and intermediate goods used in the processing; and, demand for labour used by the processing industry itself.

3. Magnitude of Linkages to the Local Economy

a. Introduction

The lack of comprehensive and up-to-date statistics on the fruit and vegetable processing industry in the Atlantic Region hinders an

a. Introduction - continued

accurate quantitative evaluation of its importance to the economy of the region. D. B. S. industry statistics can be used to arrive at an estimate of certain important variables, such as labour force, wages, cost of materials, value added, and value of shipments. The latest year for which statistics were available, in detail, for this study was 1965. They are based on the returns of the larger firms engaged primarily in the processing of fruits and vegetables. There are a number of operations in the Atlantic Region which supplement their primary activity with some type of fruit and vegetable processing. Dairies and fish freezing plants use excess freezer and storage capacity to process strawberries and blueberries and various other items for the local and export markets. Firms, for which fruit and vegetable processing is not a major part of their total economic activity, and relatively small fruit and vegetable processing operations, are not included in D. B. S. statistical reports. Nevertheless, some observations can be made regarding the size and importance of the fruit and vegetable processing industry in the Atlantic Region based on D. B. S. statistics which, since they do not reflect all fruit and vegetable processing activity, necessarily understate the full importance to the economy.

b. Linkages with the Agricultural Sector

The processing industry in the Atlantic Region purchases well in excess of 10 million dollars of raw material from the agricultural sector each year. The processing industry is a major outlet for a number of crops - blueberries, apples, peas, beans, and cole crops. Many of these crops are grown specifically for processing through contractural agreement with the processor. Thus, the farmer is assured of a basic income and does not have to rely solely on the fresh market for his livelihood.

Substantially all of the cost of basic raw material is injected as a revenue to the farm sector in the Atlantic Region. This very strong linkage backward provides a direct stimulus for increased agricultural production through an expansion of the market for the raw product. In fact, the establishment or existence of a processing facility can be an essential first step in the stimulation of both consumer demand for a processed product and the establishment of an adequate supply of raw material.

c. Linkages with Material Suppliers

In 1965, Atlantic Region processors paid in excess of $3.5 million for containers and other packaging materials. This figure

c. Linkages with Material Suppliers - continued

today would be substantially greater and an estimate of $5 million for purchase of all packaging material may be considered a reasonable approximation.

The proportion of this expenditure which feeds back into the local economy is difficult to estimate.

Many firms purchase their shipping cases from local sources; however, the bulk of their packaging requirements, cans and glass containers and specially treated waxed cardboard containers and polyethelyne bags, are purchased in Central Canada.

The recent acquisition of Maritime Can Co. by American Can may result in a shift of the production of cans to Nova Scotia to supply the regional market. Such an occurrence would have substantial beneficial effects on the local economy since about 15 percent of the value of all shipments is made up of the cost of packaging.

d. Linkages with the Local Labour Pool

Based on available D. B. S. statistics, the processing industry in 1965 injected $2-3/4 millions in wages into the local economy. A conservative estimate would put this contribution at $3-1/2 million

d. Linkages with the Local Labour Pool - continued

today. Employment ranges from 3,500 in the peak processing months to a minimum of 1,600 in the Spring.

e. Importance of the Industry to the Manufacturing Economy

Manufacturing value added by the fruit and vegetable processing industry in the Atlantic Provinces represented 5.5 percent of manufacturing value added by all industries in 1965 and 1.6 percent of manufacturing value added by all industries. The comparable figures for Canada are 11.6 percent and 1.15 percent respectively. Although the fruit and vegetable processing industry in the Atlantic Region is of less significance to the entire food processing industry than in Canada, the industry of the region has greater relative significance to the regional economy than the industry in Canada.

The relative importance of the fruit and vegetable processing industry to the economy is not equally shared between the four Atlantic Provinces. Figure 2 depicts graphically the relative economic importance, based on manufacturing value added, of the fruit and vegetable processing industry in each of the Atlantic Provinces.

e. Importance of the Industry to the Manufacturing Economy - cont'd

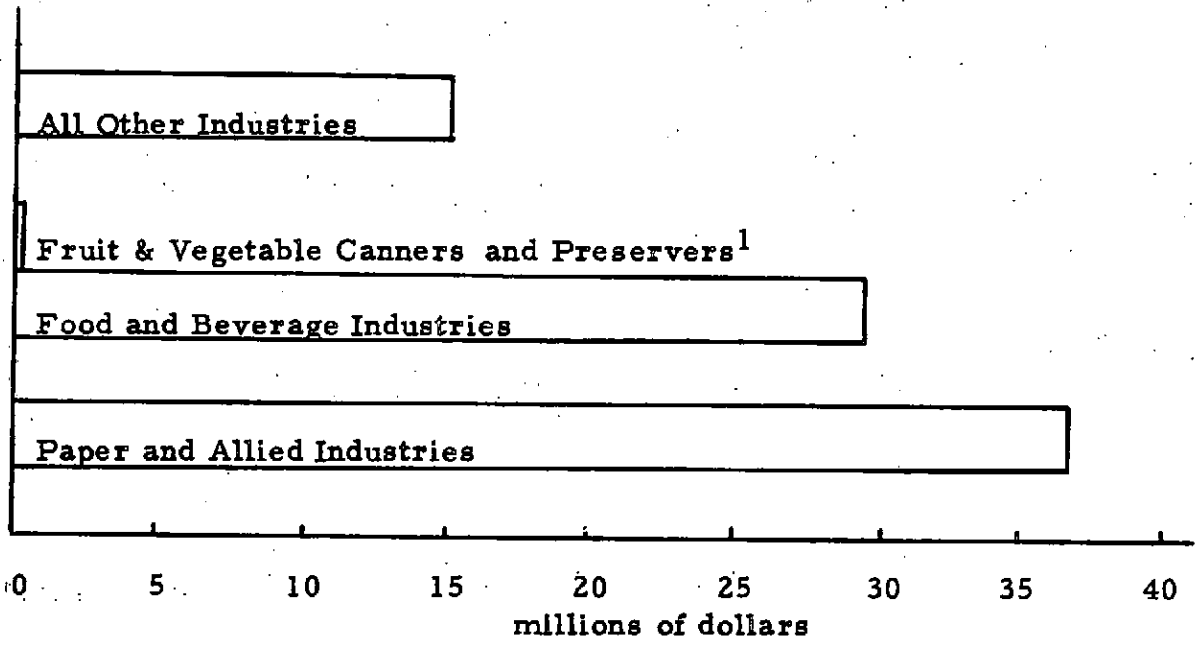
The provinces, in order of importance of fruit and vegetable processing to all manufacturing, are:

Prince Edward Island
New Brunswick
Nova Scotia
Newfoundland

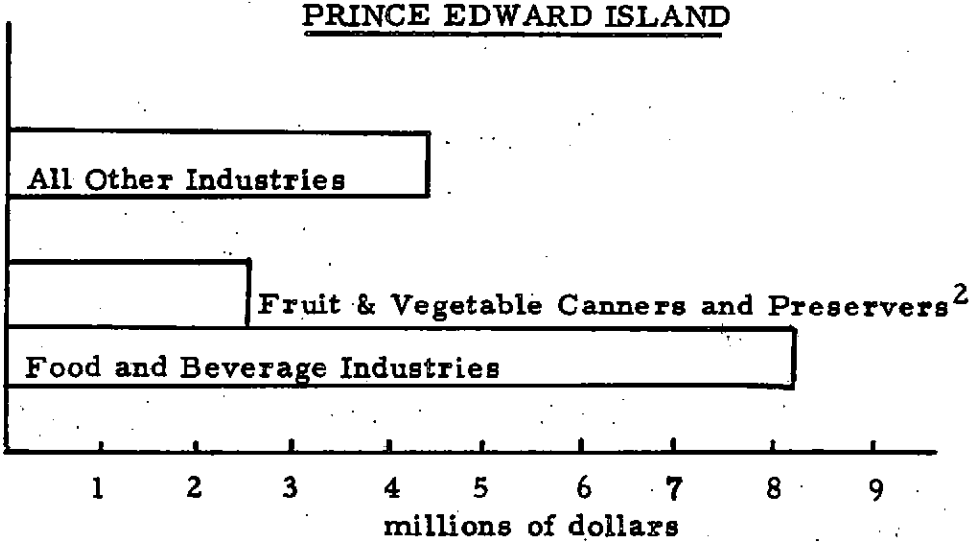
The industry in Prince Edward Island accounts for a substantial percentage of all manufacturing value added, while the remaining provinces rely on the industry to a lesser extent.

FIGURE 2 VALUE ADDED FOR SELECTED MANUFACTURING INDUSTRIES, ATLANTIC PROVINCES, 1965.

NEWFOUNDLAND



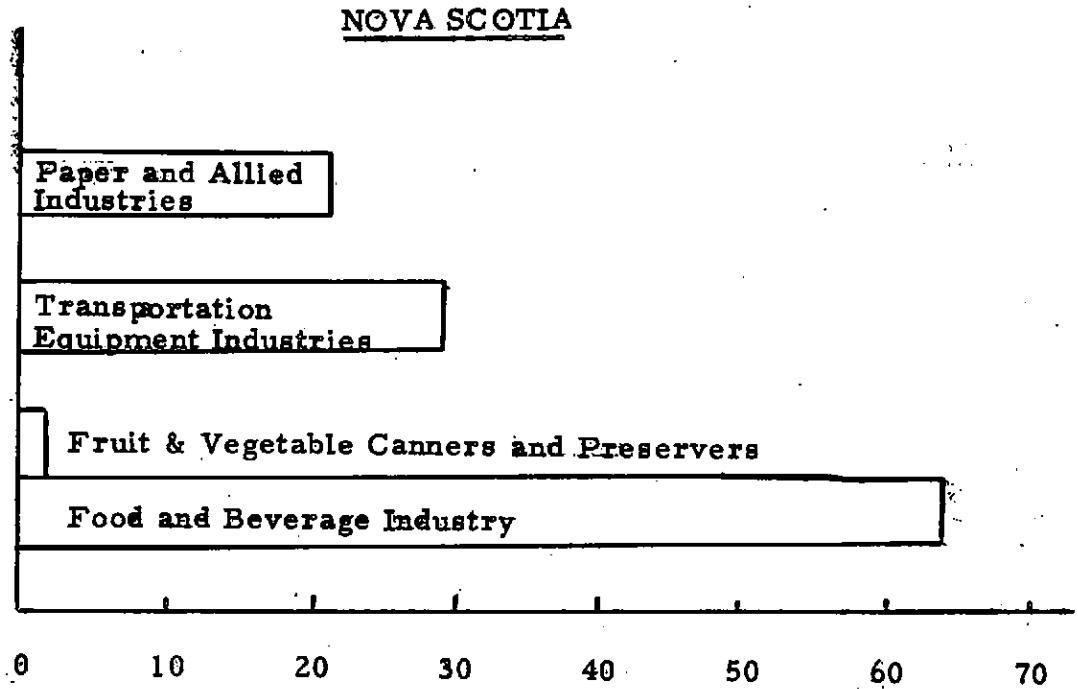
PRINCE EDWARD ISLAND



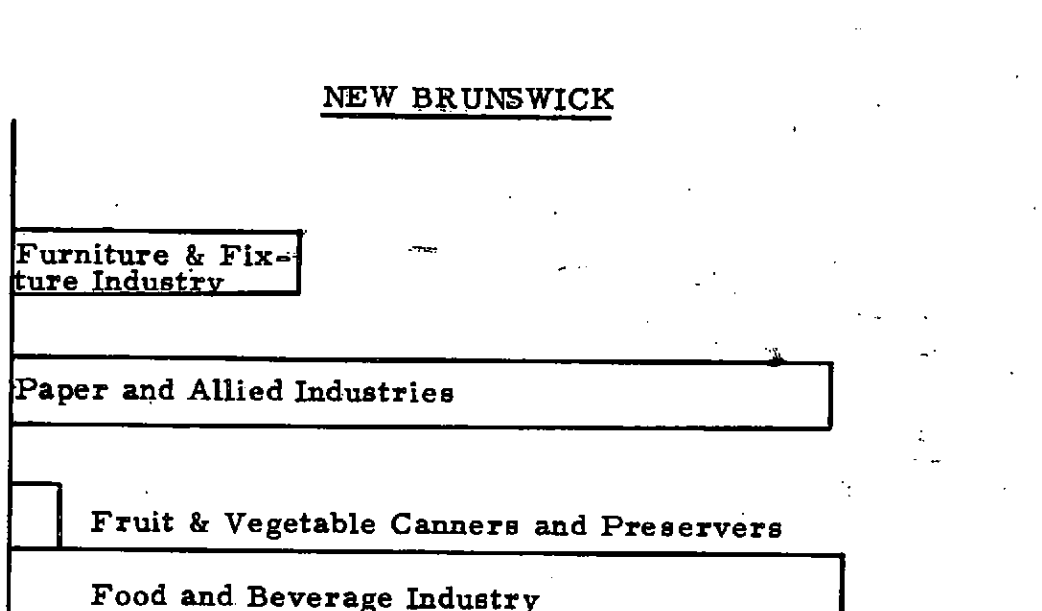
[1] Estimated

[2] Estimate based on findings of New Brunswick Productivity Council, 1967.

NOVA SCOTIA



NEW BRUNSWICK



Sources Dominion Bureau of Statistics.

II

INDUSTRY INPUTS - QUANTITY, COSTS AND RELATIVE IMPORTANCE

INTRODUCTION

The Terms of Reference call for an identification of the major inputs to the fruit and vegetable industry in terms of quantity of input, cost and the relative importance of each input to the final product of the industry. The major manufacturing inputs to a fruit and vegetable processing operation are agricultural raw material, packaging material, labour, utilities and capital. It is the purpose of the ensuing chapter to fill the requirements of the terms of reference as well as to indicate the comparative advantages or disadvantages enjoyed by the industry in the region in relation to these inputs.

AGRICULTURAL RAW MATERIALS

1. Relative Importance of Agricultural Raw Materials as a Manufacturing Input.

The basic agricultural raw product is a major input to any food processing operation. The cost of raw agricultural product is equivalent to 50 percent of total variable manufacturing cost for fruit and vegetable processing in Canada. (Table 1). For the industry in the Atlantic Region, the proportion of manufacturing cost accounted for by raw product is 56 percent. This does not necessarily reflect higher raw materials

TABLE 1 COST OF AGRICULTURAL RAW MATERIAL AS A PERCENTAGE OF TOTAL VARIABLE MANUFACTURING COSTS - CANADA AND ATLANTIC REGION, 1965

Manufacturing Costs	Canada ($'000)	Atlantic Region[1]
Labour	47280	2693
Fuel & Electricity	5614	443
Cost of materials and Supplies	266750	14313
Cost of Agricultural Raw Materials	158291	9874
Total Variable Manufacturing Costs:	319644	17446
Cost of Agricultural Raw Material as a percent of total variable manufacturing costs:	49.5	56.5

1 Estimated

Source: Fruit and Vegetable Canners & Preservers, 1965
D.B.S., Ottawa, No. 32-218

1. Relative Importance of Agricultural Raw Materials as a Manufacturing Input - continued

prices in the region but is due to significantly greater expenditures for packaging material by the industry in other Canadian areas.

2. Quantity and Cost of Raw Materials

It is difficult to present a quantitative cost figure for all the items of interest to processors in the region because of the unavailability of statistical data. Approximations will have to suffice in those cases where confidentiality prohibits disclosure of processor costs. Some general observations can be made on the relative costs of procuring raw materials in the main competing regions.

a. Peas

The average cost of peas to the processor in the Atlantic Region was 5.2 cents per pound in 1966. The average cost to a processor in Ontario that year was 5.8 cents per pound., a difference of $0.06 a pound. A comparison of Marketing Board prices in Ontario for 1968 with contract prices in the Atlantic Region indicates a spread of at least $0.01 a pound ($20.00 a ton). The price paid in the Atlantic Region is well in line with average prices paid in the main producing regions of the U.S. (Washington 5.15 cents per pound, Minnesota 5.3 cents per pound).

a. Peas - continued

The total value of peas sold to Atlantic Region processors in 1966 was $1,016,000.

b. Beans

The average cost of snap beans in 1966 in the Atlantic Region was 5.3 cents per pound, compared to 5.8 cents per pound in Ontario. This reflects a difference of .5 cents per pound. The price paid in the Atlantic Region is well over the average price paid in the main U.S. producing regions (Wisconsin 4.05 cents per pound, New York 4.6 cents per pound). The total value of beans sold to processors in 1966 for the Atlantic Region was $388,000.

c. Potatoes

Processor prices for potatoes are not available on a provincial basis. However, some indication of prices prevailing in various areas can be ascertained from the average farm value and this information is set out below.

	$per cwt.	
AREA	1966	1967
New Brunswick	1.05	1.20
Prince Edward Island	1.09	1.30
Quebec	1.72	1.82
Ontario	1.56	1.85
West	2.31	2.57

TABLE 2 AVERAGE FARM VALUE FOR CAULIFLOWER BY PROVINCE 1962 - 1966 ($ per lb.)

	1962	1963	1964	1965	1966
P. E. I.	-	-	-	.048	.035
Nova Scotia	.050	.064	.061	.061	.074
New Brunswick:	.037	.061	.063	.052	.068
Quebec:	.048	.044	.042	.047	.054
Ontario:	.049	.054	.046	.050	.063
Manitoba:	.042	.050	.046	.067	.050
British Columbia:	.051	.060	.063	.059	.061
CANADA:	.049	.053	.048	.051	.061

Source: Crop & Seasonal Price Summaries, C. D. A., Ottawa.

c. Potatoes - continued

Processors in all areas contract for a substantial percentage of their requirements and it is generally agreed that processors in the Atlantic Region procure their raw stock at slightly more favourable levels than those in other provinces.

d. Cole Crops

Prices paid by processors for cole crops are not available. An estimate of the prices paid by processors can be made by comparison with average farm value figures for the individual crops. Figures are available for cauliflower only and are presented in Table 2.

e. Apples

Although total volume of sales to processors can be determined, the only basis for regional comparison of prices available is the average farm value prevailing in the various producing areas. The average farm value per bushel for major competing regions for the years 1963-67 is set out below.

AREA	Farm Value per Bushel
Nova Scotia	97
Quebec	1.43
Ontario	1.56
British Columbia	1.82

e. Apples - continued

Over the period (1963-67), the average price per bushel at farm level in Nova Scotia was approximately $0.50 per bushel less than in Quebec and Ontario. Since the farm value shown includes both dessert and processing apples, no real comparison of processor costs for various types of apples can be made. However, it is expected that on the average, prices for processing apples are lower in the Atlantic Region. Based on sales to Atlantic Region processors of 2,561,000 bushels in 1967, total farm value would be approximately $2,535,390. The corresponding figure for 1966 would be $2.2 million.

f. Strawberries

Sales of this item to processors in the Maritimes in 1966 amounted to 1,455,000 quarts for a total value of $381,000. This is equivalent to 26.2 cents per quart. Approximately 32 percent of the crop was used by processors. Similar data for previous years is not available.

g. Blueberries

Sales volume and price on that part of the crop which is processed is not available on a provincial or regional basis. A high percentage of the crop is processed, either by local processors or by processors in the U.S. Raw material prices have fluctuated widely from a high of 23 cents

g. Blueberries - continued

per pound in 1965 to a low 7 cents per pound in 1967.

For the products on which accurate statistics are available, it is apparent that, from the standpoint of raw material prices, Atlantic Region processors secure their supplies at relatively lower levels than competing areas. In the case of peas and beans, the differential is approximately 10 percent as compared to Ontario. In part, this is due to lower production costs. However, the bargaining power exerted by growers through Marketing Boards has increased prices materially. The imminent introduction of Marketing Boards in certain Atlantic Provinces could be expected to have a corresponding affect on raw material costs.

PACKAGING MATERIALS

The cost of packaging materials used by the fruit and vegetable processing industry in the Atlantic Provinces and Canada is set out in Table 3. Packaging costs for the industry in the Atlantic Region are less of a factor in total manufacturing costs than for the industry in the whole of Canada. It does not follow, however, that packaging material itself is less costly in the Atlantic Region. On the contrary, processors in Atlantic Canada pay a premium for some of their packaging requirements, much of which is transported from Central Canada. In large measure, the difference is attributable to the use of less expensive packaging materials.

In both instances, however, packaging costs are a significant input to the productive process.

Consumers today are demanding more convenient and communicative packaging. One can expect that packaging costs will continue to rise as more convenient and appealing packaging types and materials are offered.

TABLE 3 COST OF CONTAINERS AND OTHER PACKAGING MATERIALS AS A PERCENTAGE OF TOTAL VARIABLE MANUFACTURING COSTS - CANADA AND ATLANTIC REGION, 1965

Manufacturing Costs	Canada	($'000)	Atlantic Region[1]
Labour	47280		2693
Fuel & Electricity	5614		443
Cost of Materials and Supplies	266750		14313
Cost of Containers and Other Packaging Material		98440	3510
Total Variable Manufacturing Costs	319644		17446
Cost of Containers and Other Packaging Material as a Percent of Total Variable Manufacturing Costs	30.9 %		20.1 %

1 Estimated

Source: Fruit and Vegetable Canners and Preservers, 1965, No. 32-218, D.B.S., Ottawa.

LABOUR FORCE

1. Size of Labour Force

Because of the highly seasonal demand for production labour experienced by the fruit and vegetable processing industry, the size of the labour force fluctuates widely over the year. During the late summer and fall months, production requirements reach their maximum and the total labour force in the Atlantic Region reaches a peak of approximately 3,500 production workers. The size of the labour force declines steadily during the winter months and levels off at 1,500 to 1,600 during the late winter and early spring months.[1]

2. Seasonality of Labour Demand

Figure 3 indicates seasonal labour demand for certain processed items. Those items, which may be stored for an extended length of time, can be processed out of storage and for these items labour demand is more uniform over the year. Many frozen products are stored in bulk after processing and then repackaged to meet the requirements of the market. Such a procedure aids in reducing peak labour requirements by reducing packaging labour requirements at a time when other labour

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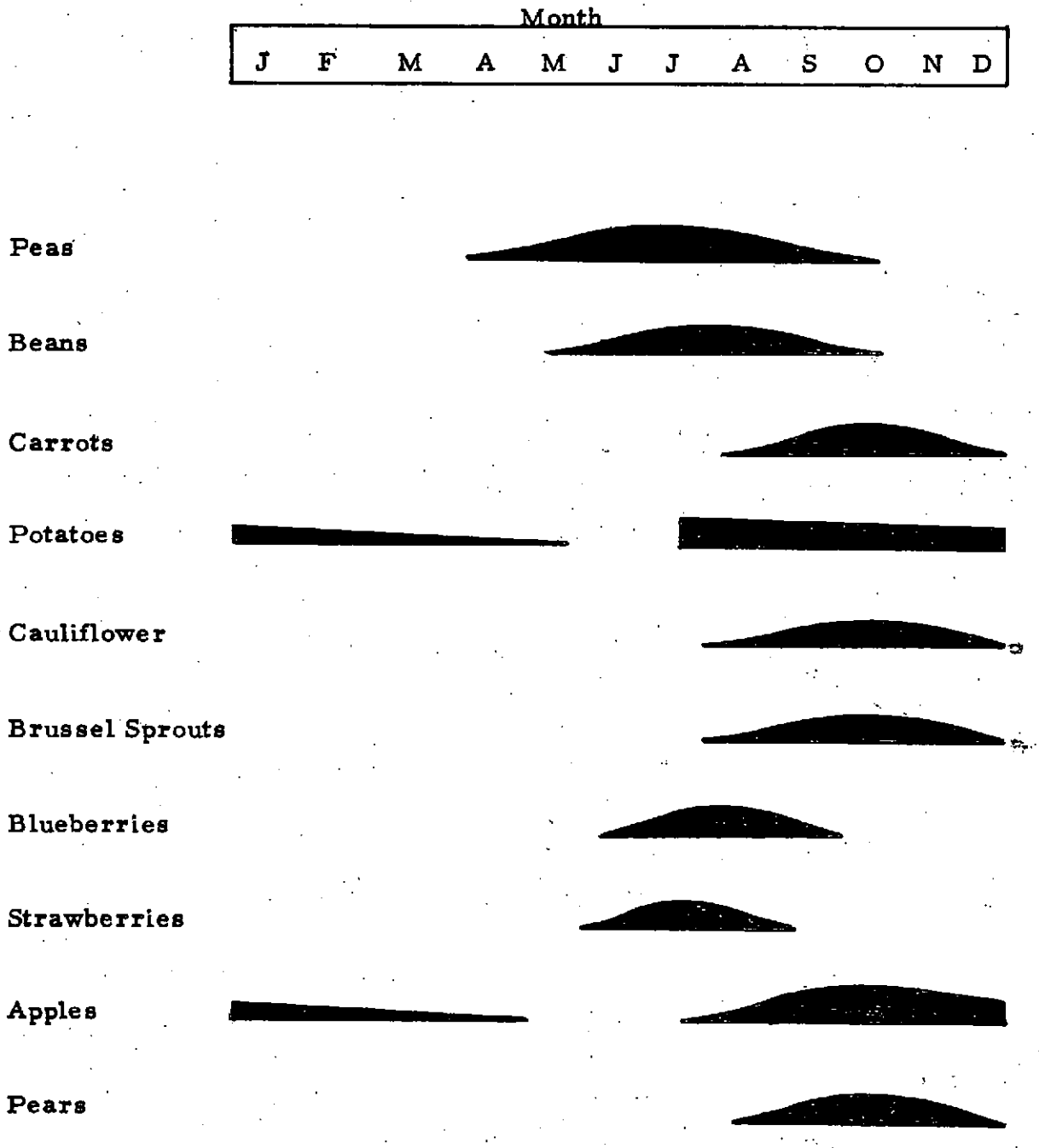
1 Based on figures obtained through interviews with processors from various Departments of Manpower.

FIGURE 3 PROCESSING LABOUR DEMAND FOR MAJOR FRUIT AND VEGETABLE ITEMS ~~ITEMS~~ - ATLANTIC PROVINCES[1]



1 Approximations only

2. Seasonality of Labour Demand - continued

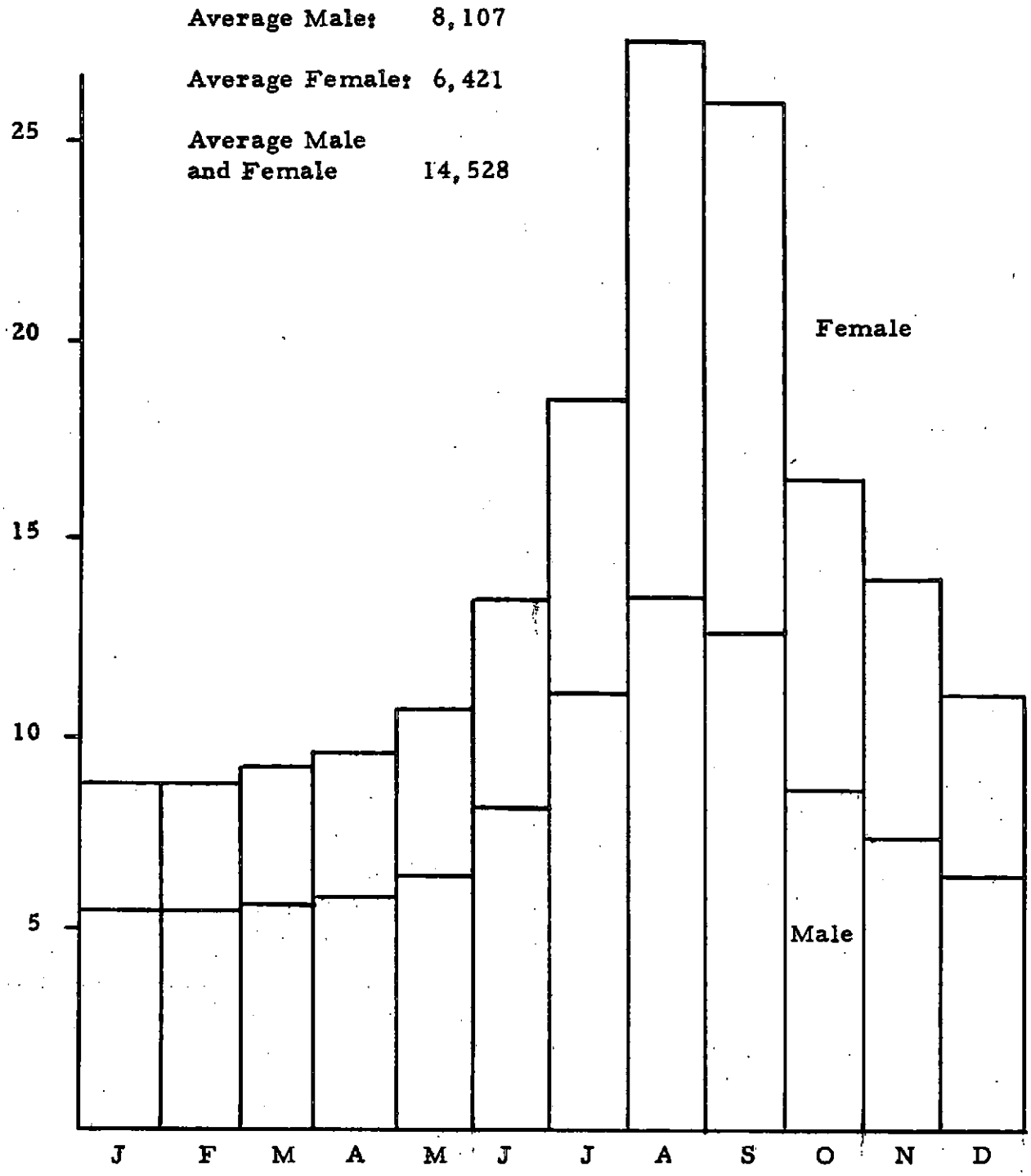
requirements are at a maximum.

Canners find themselves in a less fortunate situation since many field crops, notably peas and beans, must be processed fully immediately or shortly after harvesting. For such items, the packaging season may last one or two months after which time only a warehousing and shipping force is required. Figure 4 indicates the highly seasonal nature of employment for the industry in Canada. For the industry in Canada, average employment of males and females in 1965 was 14,528. During the months of August and September, the level of employment was only 60 percent of the yearly average and one-third of the August peak. Employment figures are not available by month for the Atlantic Region; however, the seasonality of labour demand should follow closely that of the industry in Canada.

3. Availability of Plant Labour

Several firms in the Atlantic Region voiced concern over the difficulty of obtaining adequate labour during the peak processing season. This problem is not unique to the Atlantic Region but is faced in equal proportions by the industry in all parts of the country. To help alleviate the situation, several companies operate their own private bus line, picking up employees from as far as 70 miles from the plant.

FIGURE 4 NUMBER OF PRODUCTION AND RELATED WORKERS BY MONTH - CANADA, 1965.



Source: Fruit and Vegetable Canners and Preservers, 32-218, D.B.S., Ottawa.

3. Availability of Plant Labour - continued

Most firms rely on Canada Manpower to locate a substantial portion of their labour requirements. The housewife labour pool is heavily relied upon to supplement male labour during the peak processing season. Women are employed in large numbers for inspection and preparation, while male labour is used for the heavier and more physically demanding operations.

Generally, labour was not seen as an overwhelmingly serious obstacle to the continued development of the industry. Serious problems have arisen in some areas which have hampered the competitiveness of the industry. However, the full blame should not be placed on the type of labour or the general availability of labour in the area. Labour availability is always limited. It is the responsibility of management and government to realize the existing dimensions of the labour pool and to take the necessary steps to assure an adequate supply of labour to meet production requirements.

Programmes are now underway in one area to better equip the existing labour force for employment in an industrial atmosphere, and various government industry training programmes have been available for some time now in the Atlantic Region.

4. Wage Rates

The Economics and Research Branch of the Canada Department of Labour conducts a yearly survey of wage rates, salaries and hours of labour in a number of industries. Detailed wage rates are not collected for occupations within the fruit and vegetable processing industry but are available for related food processing industries. Table 4 shows a comparison by province of the average hourly wage rates prevailing for various food industry occupational categories and Table 5 is a general summary of the average hourly wage level by province for the industry or related industries. These tables indicate the magnitude of the wage difference between the Atlantic Region and the other provinces or regions. Detailed wage levels in the Annapolis Valley region of Nova Scotia are available from an annual survey conducted in the area and general wage levels for the past three years are presented in Table 6.

Recent union contracts now in effect in P.E.I. have set the minimum wage in the freezing industry there at $1.00 per hour for men and $0.80 for women. The basic male rate will rise to $1.25 per hour over a three year period ending in 1971. Although wage levels in the Atlantic Provinces are generally lower than those prevailing in other provinces this does not mean that the contribution of labour cost to total manufacturing costs will be less.

TABLE 4

AVERAGE WAGE RATE PER HOUR BY PROVINCE FOR SELECTED OCCUPATIONS IN FOOD PROCESSING INDUSTRIES - OCTOBER 1, 1967

Industry & Occupation	Nfld.	P.E.I.	N.S.	N.B.	Quebec	Ontario	Manitoba	B.C.	Industry Average
Fish Products									
Labourer	1.12	1.04	1.37	1.21	1.30			2.40	1.25
Freezer	1.19	-	1.41	1.17	1.19			2.81	1.29
Bakeries									
General Helper (M)	-	-	1.29	1.41	1.60	2.05	2.48	2.85	1.93
General Helper (F)	-	-	1.07	1.16	1.33	1.58	2.38	2.08	1.57
Soft Drinks									
Machine Tender	-	-	1.69	1.38	1.86	1.87	-	2.19	1.84

Source: Wage Rates, Salaries and Hours of Labour, Report No. 49, Canada Department of Labour.

TABLE 5

AVERAGE HOURLY EARNINGS OF HOURLY-RATED WAGE-EARNERS IN FRUIT AND VEGETABLE PROCESSING INDUSTRY BY PROVINCES AND REGIONS, Selected Years

	1957	1961	1966	1967
		($ per hour)		
Atlantic Region[1]	0.96	1.07	1.27	1.39
Nfld.[2]	0.92	1.03	1.20	1.30
N.S.[2]	0.92	1.07	1.35	1.48
N.B.[2]	1.08	1.18	1.37	1.48
Quebec[1]	1.23	1.45	1.75	1.94
Ontario	1.17	1.34	1.77	1.87
Prairie Region[1]	1.59	1.89	2.16	2.39
British Columbia	1.22	1.48	1.61	1.84
Canada	1.11	1.27	1.60	1.71

1 Based on average for Food Industry

2 Based on average for Food & Beverage Industry.

NOTE: Average wage is not comparable between Food, Food and Beverage, and Fruit and Vegetable Processing Industry. In 1967, average hourly earnings in Canada for these three industry groupings was 2.06, 2.12 and 1.71 respectively.

Source: Review of Man Hours and Hourly Earnings, No. 72-202, D.B.S., Ottawa.

TABLE 6

GENERAL WAGE LEVELS PREVAILING IN ANNAPOLIS VALLEY FRUIT AND VEGETABLE PROCESSING INDUSTRY
1967 - 1969

JOB TITLE		1967	1968	1969
			($ per hour)	
Male:	General Labourer	1.26	1.40	1.55
	Shipping Assistant	1.52	1.71	1.76
	Mechanic	1.75	1.78	2.06
	Local truck driver	1.48	1.66	1.80
	Machine operator	1.66	1.74	1.88
	Fryer Operator	1.66	1.82	1.85
Female:				
	Packer	1.03	1.21	1.31

Source: Annual Community Survey, February 1969.

5. Productivity of Labour

It is a generally held opinion that labour productivity in the Atlantic Region in the fruit and vegetable processing industry is lower than in other parts of Canada. Such a statement is difficult to prove in fact. Some indication of labour productivity differences is given in Table 7, which shows manufacturing wages as a percent of value of shipments. Although wages are a larger percent of value of shipments in the Atlantic Region than in other regions, the difference is not significant and is not necessarily an accurate indication of actual productivity differences.

6. Relative Importance of Labour as an Input

In 1965, labour costs amounted to 15.4% of the total manufacturing costs for the industry in the Atlantic Region (Table 8). Some indication of the relative importance of labour in the processing of various fruits and vegetables is given by a survey conducted in the U.S. The contribution of labour costs to the total variable cost of manufacturing certain canned and frozen items is set out in Table 9.

7. Future Labour Requirements and Productivity

Automation and mechanization at all levels of processing, from the field to the warehouse, will tend to increase labour productivity and

7. Future Labour Requirements and Productivity - continued

decrease labour requirements, generally. Mechanical harvesters for labour intensive field crops will have a marked affect upon field labour requirements. Those sections of the labour force not required in the field will then be available for employment in the plant. Such a reallocation of labour resources would decrease the strain on the available labour pool during peak processing periods by increasing the number of labourers available for plant employment.

Increased automation and mechanization within the plant itself will decrease the fluctuation in the labour force and reduce employment of unskilled and untrained seasonal workers. This should result in increased productivity, especially in those plants where the capital for labour substitution has been the greatest.

TABLE 7 MANUFACTURING WAGES AS A PERCENT OF VALUE OF SHIPMENTS-CANADA, '65

REGION	PERCENT
Atlantic Region:	11.7
Quebec:	10.2
Ontario:	11.1
Prairie Provinces:	11.4
British Columbia:	10.2
CANADA:	10.8

Source: Fruit & Vegetable Canners & Preservers, 32-218, D.B.S., Ottawa.

TABLE 8

COST OF LABOUR AS A PERCENTAGE OF TOTAL VARIABLE MANUFACTURING COSTS - CANADA AND ATLANTIC REGION, 1965

Manufacturing Costs	Canada ($'000)	Atlantic Region[1]
Labour	47280	2693
Fuel and Electricity	5614	443
Cost of Materials and Supplies	266750	14313
	319644	17446
Cost of Labour as a Percentage of Total Variable Manufacturing Costs	14.8 %	15.4%

Source: Fruit and Vegetable Canners and Preservers, No. 32-218, D.B.S., Ottawa.

TABLE 9

LABOUR COSTS AS A PERCENTAGE OF TOTAL VARIABLE MANUFACTURING COSTS - SELECTED PRODUCTS - UNITED STATES, 1963-64

Canned Items	Labour Costs as a Percent of Total Manufacturing Costs
Fruits	
Cling peaches (halves)	10.7
Bartlett pears (halves)	12.5
Apricots (unpeeled halves)	17.3
Vegetables	
Spinach	24.8
Tomatoes	24.3
Sweet peas	9.7
Frozen Items	
Spinach	26.9
Green peas	7.8
Green beans	15.1
Broccoli	28.9
Strawberries	7.9
Brussels sprouts	20.4

Source: Organization and Competition in the Fruit and Vegetable Industry, Technical Study No. 4, National Commission on Food Marketing, June 1966.

UTILITIES: Water, Power, Fuel

Water, power and fuel costs are not a major factor in the cost of canning fruits and vegetables, but may be a major factor in the freezing of certain fruits and vegetables.

Table 10 shows the cost of fuel and electricity to be 1.75 percent of total variable manufacturing costs for Canada, and a slightly higher percentage of cost of 2.54 for the Atlantic Region, for all types of fruit and vegetable processing.

An estimate of the cost differential for industrial power between Provinces is indicated, graphically, in Figure 5.[1] Cost estimates were not available for Prince Edward Island; however, they are at least equal to and probably greater than those of New Brunswick and Nova Scotia.

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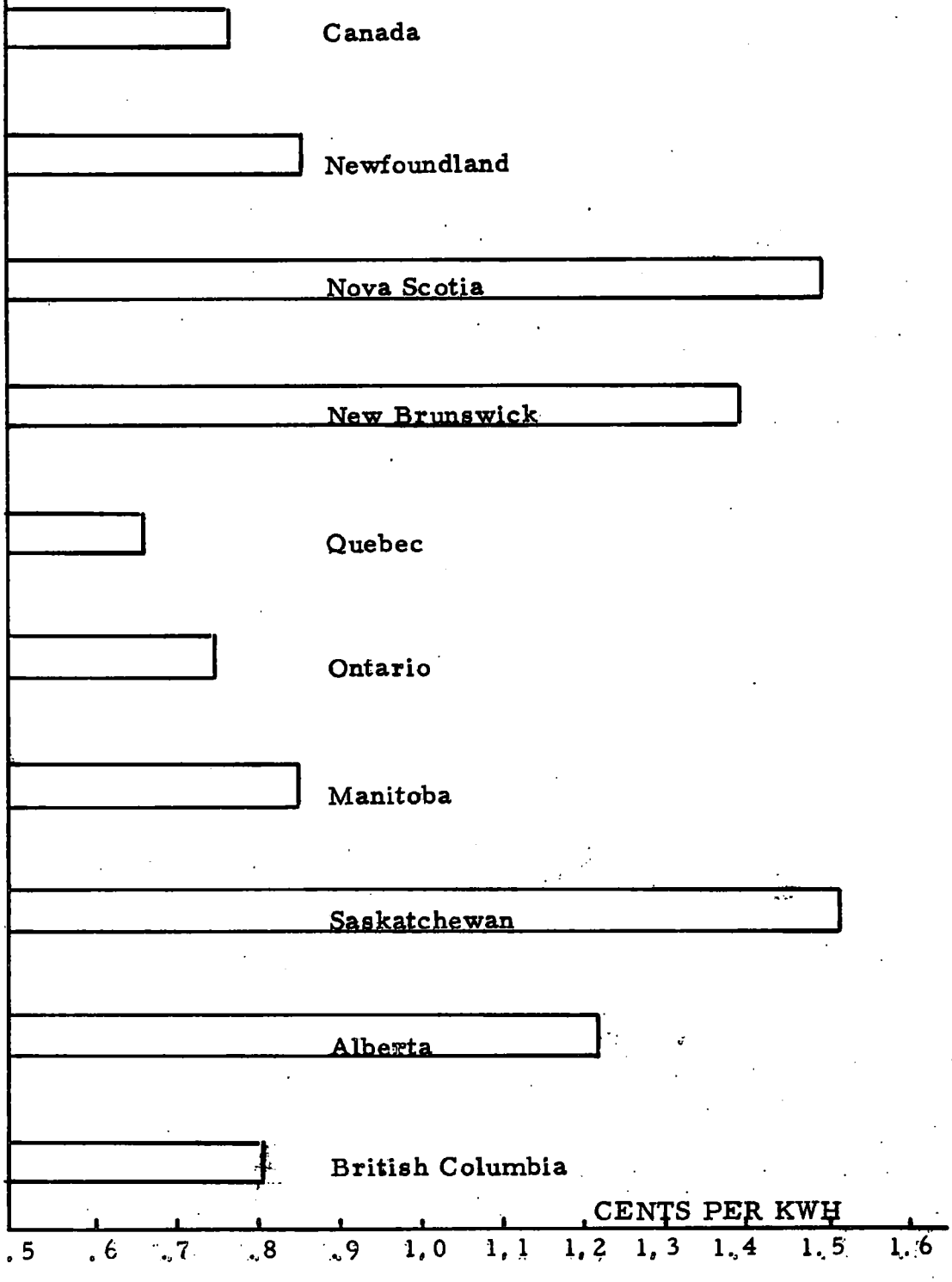
[1] Electric power costs were obtained by dividing total revenues of the sale of firm energy in the industrial sector by the number of KWH's sold by each provincial electrical utility. Each firm contracts for electric power and it is impossible to arrive at a unique figure for power costs in each province. The method employed gives only a general indication of the difference which would be experienced by a broad range of industries locating in each of the provinces. These figures should not be used to calculate power rates for a particular plant. Such rates would have to be negotiated with the respective power commissions.

FIGURE 5

COST OF FIRM ELECTRICAL ENERGY TO THE INDUSTRIAL SECTOR IN CANADA, BY PROVINCE - (1965-1966 Average)



Source: Electric Power Statistics, D.B.S., Ottawa.

Utilities: Water, Power, Fuel - continued

Power costs in the Atlantic Region are almost triple those in Ontario and Quebec. Aside from the higher direct cost of power in the Atlantic Region, there are indirect costs which must be considered, especially in Prince Edward Island. Some processing plants which require a constant supply of power with few, if any, interruptions find it necessary to install auxiliary generators capable of sustaining parts of their operation over periods of power failure. The cost of equipment for such contingencies should be added to the cost of power for plant operation.

Quantitative data on water and fuel costs, individually, were not available; however, it can be assumed that they do not vary significantly between regions. Fuel costs in the Atlantic Region may be higher than in other areas due to higher distribution costs, but this difference would be insignificant when compared to total manufacturing costs or other manufacturing cost components.

Water is an important item in most processing operations, especially in canning, and an adequate supply of fresh water is a necessity. Water is used for washing raw product, cooling of the cooking retorts, and as an ingredient in the finished product in most

canning operations. Freezing operations use large amounts of water to cool compressor units which generate large quantities of heat.

Water costs are not an important overall cost factor. Many of the processing plants in the Atlantic Region obtain their water from on-site wells which supply adequate quantities of fresh water. The cost of water obtained from such wells is roughly comparable to that from municipal water works. Water might be a problem for a large canner or freezer if the quantity used were to draw down the water table to such an extent that more or deeper wells had to be drilled. Problems may arise in regard to salt water infiltration if wells are located close to the coast.

Utility requirements vary according to the type of product and the process being employed. Table 11 shows the cost of utilities as a percent of total manufacturing costs for freezing and canning of selected fruit and vegetable products in the United States.

Canned fruit manufacturing shows the lowest utility cost requirement of .79 percent of total manufacturing cost. For vegetable canning and freezing operations, utility costs account for 2.10 percent and 7.2 percent of total manufacturing costs. Power, fuel and water require-

ments are lower for canned fruit than for canned vegetables. The higher cost of utilities for freezing is due to the large amounts of electrical energy required to operate freezing and cold storage equipment. The cost of utilities for freezing becomes a larger factor in manufacturing costs as warehousing time increases.

The cost of power for a freezing plant is significant and could be a factor which would limit development within an area.

TABLE 10 COST OF FUEL AND ELECTRICITY AS A PERCENT OF TOTAL VARIABLE MANUFACTURING COSTS FOR CANADIAN FRUIT AND VEGETABLE CANNERS AND PRESERVERS, 1965

Manufacturing Costs	Canada ($'000)	Atlantic[1] Region
Labour	47280	2693
Fuel and Electricity	5614	443
Materials and Supplies	266750	14313
Total Variable Manufacturing Costs	319644	17446
Cost of Fuel and Electricity as a Percent of Total Variable Manufacturing Costs	1.75 %	2.54 %

[1] Estimated

Source: Fruit and Vegetable Canners and Preservers, 1965, D.B.S., No. 32-218, D.B.S., Ottawa.

TABLE 11 COST OF UTILITIES AS A PERCENT OF TOTAL VARIABLE MANUFACTURING COSTS FOR FREEZING AND CANNING SELECTED FRUIT AND VEGETABLE PRODUCTS.

Fruit & Vegetable Product	Cost of Fuel, power and water as a percent of total variable manufacturing costs. Percent
Canning - Fruits	
Cling peaches (halves)	.76
Apricots (unpeeled halves)	1.02
Bartlett pears (halves)	.51
Fruit cocktail (heavy syrup)	.88
Average:	.79
Canning - Vegetables	
Beets (sliced)	3.0
Spinach	1.7
Tomatoes (peeled)	1.5
Corn (cream style)	2.6
Sweet peas	1.7
Average:	2.10
Freezing[1]	
Spinach	12.4
Cut Corn	9.0
Green peas	8.0
Green beans	6.4
Lima beans	8.1
Broccoli	5.2
Strawberries	4.2
Brussel Sprouts	4.1
Average:	7.2

[1] Includes cost of freezing and first month's storage as well as general fuel, water and power requirements.

Source: National Commission on Food Marketing, Technical Study No. 4, "Organization and Competition in the Fruit and Vegetable Industry".

CAPITAL INVESTMENT IN FRUIT AND VEGETABLE PROCESSING PLANTS

Capital investments for fruit and vegetable processing plants vary widely depending on the type and number of products to be packed, as well as the installed line capacity desired on each product. There is a substantial differential in capital requirements depending on whether the product is to be canned or frozen.

A single line canning plant can be established for approximately $100,000. Normally such enterprises are not truly viable and consequently should not be encouraged.

Multi-product canning plants require an investment of at least $250,000. but to obtain any economies of scale the investment would have to approach $1 million. The investment required varies widely with the type of products to be processed and the requirements for expensive sophisticated equipment needed to be competitive.

Single line frozen food plants of the type installed for blueberry operations require a minimum of $250,000 to provide the necessary freezing installation, processing equipment, storage facilities and buildings. However, to procide sufficient capacity for a 2-3 million pound annual pack of this product, the investment would approach $3 to 400,000.

Multi-product plants capable of freezing 15-20 million pounds of vegetables annually require a capital investment in the area of $2 million. High volume single product plants for an item such as frozen potato products with a similar annual capacity would require substantially less capital investment.

The ratio of capital investment to annual volume is of real significance to the profitability of any operation. For instance, a firm with a capital investment of $2 million processing 20 million pounds annually has a fixed investment of $0.10 per pound of product packed. The resulting annual carrying charges to cover principal and interest are relatively high. If such a plant is operating at 50% of capacity, which has been the case with certain Atlantic processors, the resulting overhead charges to meet annual payments are doubled on a per pound basis.

The serious disadvantage of operating plants of limited scale, as compared to the giant firms in the industry, can be ascertained from the projected investment in a new frozen potato product plant under construction in the State of Maine. This plant will have an annual volume of 450 million pounds with a resulting capital investment of only $0.02 per pound of product packed. The competitive cost advantages accruing to such a firm are obvious.

III

MARKETS AND MARKETING - PROCESSED FRUITS AND VEGETABLES

DEMAND FOR FRUITS AND VEGETABLES IN CANADA

1. Introduction

Changes in consumer incomes and living patterns, and in the art of processing food, have resulted in marked alterations in consumer demand for fruits and vegetables. Per capita consumption of fruits and vegetables has increased during the past decade. During this period, there was a tendency for consumers to substitute processed for fresh forms of fruits and vegetables. And because the increase in consumption, and the substitution of processed for fresh forms, proceeded at a different rate for individual crops, some changes have occurred in the importance of major fruit and vegetable items in the Canadian diet.

These trends in consumption have had important affects on the fruit and vegetable marketing system, as well as on the farmers engaged in the production of these crops. Firms engaged in the processing and marketing of fruits and vegetables have been affected by trends in consumption also.

The purpose of this section is to examine major trends in the consumption of fruit and vegetable products, and particularly those of

1. Introduction - continued

significance to Atlantic Canada, to relate these trends to changes in consumer preferences and other population characteristics, and to suggest future changes in consumption patterns.

2. Major Trends in the Consumption of Fruits and Vegetables

Distinct changes have occurred over the past decade in the consumption pattern of Canadians. Over the period, 1961 to 1966, per capita consumption of fruits and vegetables increased 19.9 and 6.1 pounds, respectively, on a fresh equivalent basis. In both cases, consumption of the fresh item has lagged behind increases in consumption of the processed form (Table 12).

The greatest increases have taken place among frozen fruits and vegetables, with frozen vegetables showing the greatest percentage gain. Although increases in per capita consumption of frozen fruits and vegetables have been significant on a percentage basis, consumption of frozen fruits and vegetables by volume is small compared to consumption of the fresh or canned item.

Consumption of canned fruits and vegetables increased slightly and it is unlikely that any major per capita increase will occur in the future, although certain new product variations may show significant gains.

TABLE 12 PER CAPITA CONSUMPTION OF FRUITS AND VEGETABLES BY MAJOR PRODUCT FORM -- CANADA.

	Pounds per Capita per Annum					
	1955-59 average	1961	1964	1965	1966	Percent Change 1955/59 - 1966
Fruit, total[1]		167.7	175.6	182.2	187.6	
Fresh - retail wt.	102.8	94.6	97.2	98.2	97.2	-5.5
Canned - net weight	15.4	17.5	14.1	17.0	17.8	15.5
Juice - net weight	19.9	20.8	21.8	19.8	23.8	19.5
Frozen - retail wt.	1.7	2.4	3.7	3.7	3.3	94.0
Vegetables, total[1,2]		172.6	160.4	174.8	178.8	
Fresh - retail weight	89.8	93.6	79.7	83.7	93.7	4.0
Canned - retail wt.	35.7	34.6	36.9	39.2	38.9	9.0
Frozen - retail wt.	1.9	3.6	3.6	4.6	5.7	300.0

1 Fresh equivalent.

2 Does not include potatoes.

Source: Apparent Per Capita Domestic Disappearance of Food in Canada, 32-226 D.B.S., Ottawa.

2. Major Trends in the Consumption of Fruits and Vegetables - continued

Although fruit juice shows an increase of only 19.5 percent, consumption of juices - other than citrus - increased by 6.2 pounds per capita or 224 percent. The decrease in consumption of citrus juice is the result of a substitution of frozen concentrated juice in place of the non-frozen product.[1]

There was only a slight difference in the total amounts of fruits and vegetables consumed in 1966. Per capita consumption of the major fruit forms was 187.6 pounds and of the major vegetable forms, 178.7 pounds, on a fresh equivalent basis.[2]

3. Trends in Consumption of Selected Fruits and Vegetables

The most important influence on per capita consumption of fruits and vegetables has been the rate of substitution of processed for fresh forms of these products in the national diet. While this substitution

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[1] It is important to note that the frozen product is concentrated to a volume and weight approximately one-fourth of the retail weight of non-frozen juice. Consumption of frozen citrus juice has increased considerably in the past two decades in the United States and there is no reason to believe the same trend has not been followed in Canada.

[2] Excluding potatoes. Per capita consumption of potatoes in 1966 was 153.4 pounds.

has increased total per capita consumption of some items, for others it has been sufficient only to compensate for the decrease in fresh consumption of the item. These changes in consumer preferences have sometimes been followed by dramatic re-arrangements in the processing industry.

Table 13 indicates consumption of selected fruit and vegetable items by product form. A brief review of the main items will highlight important trends which are occurring.

Consumption of all forms of the selected fruit items increased over the period. Consumption of fresh apples and apple juice increased significantly, while consumption of canned and frozen apple products rose only slightly. Consumption of the other fruit items is small when compared to apple products and increases in consumption vary widely between items.

Total potato consumption has increased slightly since the 1958-1960 period. However, since 1960 the decline in fresh consumption has outstripped the increase in consumption of the processed product and it appears that total potato consumption may eventually drop below the 1958-1960 average.

TABLE 13 PER CAPITA CONSUMPTION OF SELECTED FRUITS AND VEGETABLES BY PRODUCT FORM, CANADA

FRUITS & VEGETABLES	average 1958-60	average 1960-63	1964	1965	1966	Percent Change 1958/60-66
	pounds per capita					
FRUITS						
Apples, total[1]	-	-	41.1	40.4	38.5	-
fresh	18.6	23.8	27.8	27.4	24.1	30
canned[2]	1.9	2.1	1.9	2.3	2.3	21
juice	4.6	5.3	8.3	6.3	7.3	59
frozen	-	0.3	0.2	0.4	0.4	-
sauce[3]	.7	-	-	-	1.1	-
Pears, total	-	-	5.3	4.5	5.7	-
fresh	2.9	2.6	3.1	2.1	3.6	24
canned	1.8	2.0	2.0	2.1	1.9	5
Raspberries, total	-	-	0.7	0.8	0.7	-
fresh	0.1	0.1	0.1[4]	0.1[4]	0.1[4]	-
canned	0.2	0.2	0.1	0.2	0.2	-
frozen	0.4	0.5	0.5	0.6	0.5	25
Strawberries, total	-	-	2.3	2.3	3.1	-
fresh	1.4	1.2	1.5	0.9	1.5	7
canned	0.2	0.2	0.2	.1	0.7	350
frozen	1.1	1.2	1.2	1.6	1.2	9
VEGETABLES						
Potatoes, total	147.5	159.5	157.1	156.0	153.4	4
fresh	133.4	139.8	133.1	124.5	115.0	-14
processed	14.1	19.7	24.0	31.5	38.4	272
Cauliflower, total	-	-	1.7	2.0	1.7	-
fresh	1.6	1.7	1.7	2.0	1.7	6

TABLE 13 - continued

Peas, total	-	-	6.7	6.3	7.0	-
fresh	0.6	0.5	0.5	0.1	0.1	-88
canned	6.1	6.0	6.1	6.0	5.7	-6
frozen	-	1.6	2.0	2.1	3.0	-
Beans, total	-	-	3.9	5.3	4.0	-
fresh	1.9	1.7	0.9	1.7	0.5	-62
canned	3.3	3.3	3.2	3.3	3.4	3
frozen	-	0.6	0.6	0.8	0.7	-
Carrots, total	-	-	16.0	15.9	18.9	-
fresh	15.7	15.0	14.4	14.1	17.4	11
canned	1.0	0.9	1.3	1.5	1.2	20
Asparagus						
fresh		0.3	0.2	0.2	0.2	-
canned		0.4	0.4	0.4	0.4	-
Turnips, total	-	-	6.7	7.2	5.7	-
fresh	-	4.9	6.7	7.2	5.7	-

1 Basis of measurement:- total, fresh equivalent; canned, net weight; juice, net weight.

2 Includes apple sauce.

3 Based on supply and disposition figures obtained from Canadian Farm Economics, Volume 3, December 1968. Average 1956-60 is used in place of 1958-60 average.

4 Estimated at 0.1 for 1964-65 and 66, based on 1060-63 average.

Source: Apparent per capita Domestic Disappearance of Food in Canada, No. 32-226, D.B.S., Ottawa.

3. Trends in Consumption of Selected Fruits and Vegetables - continued

The consumption of fresh cauliflower has remained stable and shows a slight percentage increase from the 1958-1960 average. Consumption estimated for other cole crops, broccoli and brussel sprouts were not available.

Consumption of fresh peas and beans has declined significantly. Consumption of the canned product has held steady, with increases in total consumption attributed to advances in consumption of the frozen form, especially in the case of peas.

Consumption of both fresh and processed carrots has increased. Although information was not available on consumption of frozen carrots, it may be estimated from U.S. consumption figures to be about 5 percent of fresh consumption, or 0.93 pounds per capita, in 1966.[3]

Consumption of canned asparagus has remained unchanged at 0.4 pounds per capita, while fresh consumption decreased slightly from the 1960-1963 average of 0.3 pounds per capita. Consumption of the frozen product is very small.

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3 Based on ratio of frozen to fresh consumption for the years 1960 to 1963. U.S. Food Consumption, U.S.D.A., June 1965.

3. Trends in Consumption of Selected Fruits and Vegetables - continued

Consumption of fresh turnips has increased rather erratically from a 1960-1963 average of 4.9 to 5.7 pounds per capita in 1966. Very little processing of this item takes place.

4. Future Levels of Fruit and Vegetable Consumption

As new processing techniques are developed, periodic growth in the consumption of specific fruits and vegetables is anticipated. But the contribution of these dramatic growth products to long-run demand for fruits and vegetables in general should not be over emphasized. Increases in per capita consumption of frozen vegetables and juices - the most significant growth products since 1958-1960 - should continue for a few years then begin to level off. This same trend was followed in the United States, with consumption there levelling off in the '60s for these items.

With increasing consumer income, the substitution of processed for fresh forms will be accelerated. Rising income will also be cause for a further expansion of the institutional market. In 1962, Canadian families spent approximately 11.2 percent of their food expenditures on food consumed outside of the home. In the United States, 16 percent of

4. Future Levels of Fruit and Vegetable Consumption - continued

total food expenditures were for food consumed outside the home.[4] The Canadian figure can be expected to approach that of the United States over the next decade and this is an indication of the increasing importance of the institutional food market.

SIZE OF THE CANADIAN FOOD MARKET

1. Population Factors and Consumption

The critical determinants of the magnitude and the character of consumer demand include the total population of an area and its composition in terms of various demographic factors - income, family size, geographic location, female employment and urbanization.

Population, however, is the common denominator used to describe the size of the market for most food products, including processed fruit and vegetable products. Other factors modify the basic demands created by population for a particular product. (Appendix K)

Population statistics presented in Appendix N give population (April 1, 1968), 10 year rate of growth, percent of total Canadian population and number of households for several Canadian areas and cities.

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4 Food Consumption of Households in the United States, Spring 1965, U.S. Dept. of Agriculture.

1. Population Factors and Consumption - continued

Possibly the most important single determinant of demand, aside from population, is income. Table 14 shows income levels by Province in the form of an income rating index. The income rating for each area was obtained by expressing average personal disposable income (i.e. total income divided by total population at July 1, 1967) as a percentage of the average for Canada as a whole.

2. The Regional Food Market

Population projections for the Atlantic Region indicate that there will be little or no increase in population for the three mainland provinces up to 1986. The island province of Newfoundland will grow by about 100,000 by that time - and it is possible that this increase may represent most of the gain in population for the Atlantic Region in the next 17 years.

Because food sales have a close relationship to population and population growth, the food processors in the Atlantic Region must look to the markets of Central Canada, the United States and other areas, for growth in real terms, in the years that lie ahead.

At present, the population of the Atlantic Region is about 10 percent of the Canadian total; however, since population growth is not keeping pace with the rest of Canada, this figure will slowly decrease.

TABLE 15 POPULATION PROJECTIONS - ATLANTIC PROVINCES

Province	1971	1976	1981	1986
Newfound-land:	521,000	543,000	570,000	599,000
Prince Edward Island:	108,000	107,600	108,100	109,000
Nova Scotia:	761,200	759,700	759,800	759,700
New Brunswick:	623,400	623,900	626,800	630,400
TOTAL				2,039,000

Source: A. D. B. Statistics, December 1968, D. E. Foohey.

3. The Central Canadian Food Market

Sixty-three percent of Canada's total population is now located in the provinces of Quebec and Ontario, and the mass markets of Central Canada are part of a megalopolis that has spread from Windsor and Niagara Falls, Ontario, almost uninterrupted through Hamilton and Metro Toronto, to Montreal. The major metropolitan areas of Toronto and Montreal account for 11 and 12 percent, respectively, or over 23 percent combined of the entire population of Canada.

The income rating index of these two areas is 119 and 108 percent respectively, and their 10 year rate of growth, 39 and 30 percent. The ten year rate of growth of Ontario and Quebec has been 25 and 19 percent respectively.

The growth rate of other areas within the Central Canadian megalopolis are:

Ottawa	32 percent
Hamilton	30 percent
London	33 percent
St. Catherines	33 percent
Oshawa	49 percent
Brampton	206 percent
Quebec City	29 percent

TABLE 14 INCOME RATING INDEX - JULY 1, 1967

Province	Index
British Columbia	111
Alberta	105
Saskatchewan	107
Manitoba	102
Ontario	111
Quebec	90
Nova Scotia	80
Prince Edward Island	71
Newfoundland:	65
New Brunswick	75

Source: The Financial Post, 1968-69, Survey of Markets.

3. The Central Canadian Food Market - continued

Unfortunately, some major segments of this burgeoning, affluent Canadian market lie 1,000 miles from some of the food processing plants in the Atlantic Provinces.

THE CANADIAN FOOD DISTRIBUTION SYSTEM

The main line of the food distribution system runs from producers, to processors, through food brokers, to wholesalers, to retailers, and finally to consumer.

Aside from the movement of goods which takes place between the farmer and the processor, food distribution is handled by brokers (or the companies own sales force), wholesalers and retailers.

1. Company Sales Force

Many of the large food processors maintain a permanent sales force. Such a sales force is economically justified if the processor has a substantial volume of sales in a particular market and a wide range of product lines.

Only one processor in the Atlantic Region sells exclusively through his own sales force in the region. Most processors employ brokers to develop and supply their markets.

2. Food Brokers

The broker is an integral part of the processed fruit and vegetable distribution network. Not only are his services employed by some of the larger firms, but normally small and medium sized companies rely on brokers almost exclusively to handle sales for the retail market. The broker usually does not own his own warehouse or means of delivery, nor does he take possession of merchandise. His job is to convince the local retail chains, co-operatives, voluntaries and distributors to stock and sell the product line he represents. When he "sells" an order to any of these factors, he forwards the order to his principal whose responsibility it is to see that goods are shipped to the customer. The billing is done by the principal and the broker is paid a commission. An average commission for a broker is 3 percent of the f.o.b. price, but can run as high as 5 to 10 percent on specialty items. Brokerage houses run in size from one or two-man operations to national organizations handling sales across the country and employing up to 100 men . The Canadian Food Brokers Association lists 225 members and it is estimated that there are an equal number who are not members of the national association.

It is generally agreed that brokers handle 50 percent of the total grocery dollar volume sales in Canada. In the United States, food brokers handle 75 percent of the grocery volume. Some may favour retail merchandising, while others specialize in the institutional market.

2. Food Brokers - continued

Except in the heavily populated metropolitan areas, brokers can usually handle sales more economically due to the wide range of products which they handle. All of the Atlantic Region processors employ brokers in one or more of the markets in which their products are sold.[5]

Those firms who have their own sales force usually rely upon brokers to cover markets which cannot be effectively covered by their own sales force, for examale, distant provinces and export markets.

Table 16 indicates the location of brokers for certain well known brand names produced by Atlantic Region processors. The location of a broker does not necessarily indicate the boundaries of product distribution as broker connections extend beyond provincial boundaries.

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5 With the exception, possibly, of some very small processors whose sales are concentrated in localized areas.

TABLE 16

LOCATION AND NUMBER OF BROKERS FOR FIRMS OR BRAND NAMES HAVING PROCESSING FACILITIES IN THE ATLANTIC PROVINCES

BRAND NAME	Nova Scotia	New Brunswick	New-foundland	P.E.I.	Ontario	Quebec	Other
Graves						1	1
Avon		1	2		1		
Cudney	1	1			1	1	
McCain						1	
Fraser Vale					1	1	3
Seabrook Farms					2	1	
Scotian Gold	3				1	1	

Source: Canadian Grocer, February 1969

3. Wholesalers

Food wholesalers link food processors with retailers and institutional outlets.

The frozen food distributor or the canned goods wholesaler buys and takes possession of the goods he handles, owns or rents his own warehouse, and owns or rents the means of delivery of the goods he sells. Sales to the "wholesaler-distributor" are made either by the company's own sales force or through a broker.

Grocery wholesalers are classified into three types:

(1) retailer-owned co-operative wholesalers

(2) voluntary group wholesalers sponsoring retail groups, and

(3) independent wholesalers whose customers have no affiliation with the wholesaler.

These food wholesale organizations have become a significant part of the present day food distribution system. They are presently taking steps to ensure a future role in the food distribution system.

4. Retailers

The retail food store market has grown since 1961 from a volume of sales equal to $3.7 billion to a record high of $5.6 billion in 1968. The annual rate of growth of sales since 1963 has been over 6.0 percent. In 1968, there were 32,000 stores classified as chain, group, or unaffiliated independents. The most important of these ownership categories is the chain store, which in 1968 increased its share of the retail market to 48.7 percent. Retail food stores continue to be the single most important outlet for the sale of most food stuffs.

5. Institutions

The institutional food market may be defined to include all eating done away from home. This very broad definition includes a conglomeration of eating places and establishments which make food available to consumers. These include hotels, restaurants, schools and colleges, hospitals, airlines, railways, industrial and office cafeterias, clubs and thousands of "drive-in" food operations that line the highways of Canada.

Some ides of the vast size of the institutional market is given by the fact that 11.2 percent of all food expenditures by Canadian families in 1962 were for food consumed outside the home. This same

5. Institutions - continued

figure for the United States in 1965 was 16 percent and the Canadian figure can be expected to approach this in the near future.

The institutional market is served in a special manner. The institutional buyer deals almost exclusively with wholesalers in the trade - wholesalers with several thousand items on their shelves - because the institutional buyer is now like the average consumer who wants to do his food and grocery buying via one-stop shopping. The institutional buyer seldom has time to deal with brokers or manufacturers who offer few lines of canned goods or a few lines of biscuits or candies - and by dealing with fewer sources of supply, the institutional accounting is reduced in volume, with concurrent savings in time and dollars.

The institutional market has called for convenience packaging and portion control, as a result of rising labour rates for kitchen help, and the shortage of qualified cooks and chefs. Butter, jam, jelly, marmalade, ketchup and vinegar are purchased in individual 1 - 2 oz. servings, while needs for canned fruit and vegetables are filled with the processed products in No. 10 containers containing about 6 pounds to a tin, i.e. apple sauce, apple slices, apple juice, canned whole potatoes, and high quality lines of pickles.

5. Institutions - continued

The institutional buyer is looking for quality products at low prices. He often solicits tenders for supply contracts that may run for several months, and has no particular interest in branded merchandise. He makes no requests for co-operative advertising, or special discounts to cover special promotions. He is, however, much more interested and demanding with regard to quality control, food values, caloric content, and the "cost per serving" aspects of the food product being offered.

6. Development of Wholesalers and Retailers

a. The Chain Food Stores

The distribution system for most of the fresh produce, processed foods, dairy products, bake goods and non-food grocery lines ends on the clean and crowded shelves of the food stores that are now a significant element of almost every community in Canada today.[6] They emerged in the twenties and survived in the depression years of the thirties. While their years of most substantial and widespread growth were in the years following World War II, it was during the fifties and in recent years that they evolved into the highly organized wholesaler giants and corporate chains that they are today.

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6 A retail food chain is four or more stores under single ownership.

TABLE 17 CANADA'S RETAIL FOOD CHAINS - NUMBER OF OUTLETS AND LOCATION - 1968.

Name	B. C.	Prairies	Ontario	Quebec	Atlantic Provinces	Total
A & P		6	156	53		215
Bantam			26			26
Becker's Milk			209			209
Busy B			12			12
Canada Safeway	98	145	9			252
Capitol Stores					6	6
Corner Stores			36			36
Dionne				14		14
Dominion Stores		16	218	98	49	381
Econo-Mart	2	12				14
Food City			20			20
I. P. C. Stores					4	4
JAT Stores				10		10
Lamontagne				7		7
Loblaws	3	31	200			234
Mac's Milk			172			172
Marchés Union				14		14
Mike's Food Stores			6			6
Mini-Marts	23	29				52
OK Economy		41				41
Overaitea		50				50
Payfair		6				6
Perrette				84		84
Power			25			25
Shop-Easy	23	4	7			34
Shore Chain Stores					6	6
Sobey's Stores				3	36	39
Spot Supermarkets				12		12
Steinberg's			56	120	1	177
Sunnybrook			4			4
Super City			17			17
Super-Valu	38					38
Zehr's			16			16
Regional Totals:	237	290	1,189	415	116	2,247

Note: Retail stores operated by major wholesalers trading under the name of a well-known voluntary group, such as Red & White or IGA, etc. are not included in this table.

Source: Canadian Grocer, 1968

a. The Chain Food Stores - continued

The massive urbanization of Central Canada that started with the outburst of World War II, the concurrent development of provincial highways and city streets, the automobile, stability in employment and rising income, lower prices for fresher food - all contributed towards the growth of the corporate food stores and the subsequent defensive reaction of wholesaler oriented independent retailers across Canada. The movement continues and for the time being, the most dynamic elements of the distributor system are the major regional I. G. A. wholesale franchise owners, Oshawa Wholesale Ltd. and M. Loeb Ltd. in Central Canada and, to a far lesser degree, Boland Limited of the Atlantic Region. During the formative years, Canada's two major corporate food chains were organized and developed by men with consummate entrepreneurial skills, T. P. Loblaw and J. W. Horsey of Dominion Stores. They were followed closely by the Steinberg brothers of Montreal, who still confine their major retail operations to the Province of Quebec. The loaning institutions and the public did not hesitate to support Loblaws as they opened almost a store a week in the years following World War II, and Argus Corporation provided the necessary funds for Dominion Stores Ltd. to compete with a similar expansion programme. They were so successful in providing Central Canada with the kind of stores and number of outlets required to serve the food requirements of our main population

a. The Chain Food Stores - continued

centres that they drove the biggest grocer of them all, Atlantic and Pacific, into a subordinate position in Canada. With several thousand stores to finance in most of the densely populated areas in the United States, the American company could not provide A & P (Canada) with sufficient dollars or top management to compete with Dominion and Loblaw here.

Now all of this is relative to the malaise of the food processors in the Atlantic Provinces because Loblaws, Dominion, A & P, Steinberg's and the I. G. A., grew with the rapidly expanding markets of Central Canada; grew and prospered with the concentration of population in the main cities and towns of Ontario and Quebec, and these benefits were compounded as new immigrant Canadian chose to live in Central Canada by the thousands.

Between June 1956 and June 1957, the population of Ontario alone increased by 231 thousand. Unfortunately, during these formative years, when several hundred stores were opened by the major chains, links with the supplier plants in Central Canada were forged and, in many cases, these food processors and grocery product manufacturers were right inside the mass market of metro Toronto, Central Ontario, Montreal and other growth centres.

TABLE 18 SALES VOLUME BY CANADA'S TOP FOOD STORES & WHOLESALERS.

Ranking	Company	Volume	Stores
1	Loblaw's	613,000,000	234
2	Dominion	584,992,000	381
3	Safeway	481,000,000	262
4	Steinberg's	439,000,000	177
5	A & P	250,000,000	215
6	Hudson's Bay	334,000,000	239
7	West Fair	206,840,000	118+
8	Becker Milk	34,511,000	209
9	Marché Union	25,000,000	14
10	Zehr's Markets	24,000,000	16
	M. Loeb Ltd.	122,000,000	
	Oshawa Wholesale	500,000,000	884
		$3,614,343,000	

Source: Canadian Grocer

a. The Chain Food Stores - continued

Arterial roads that were more suitable to tourist travel than high speed commercial transport, wound their way to the Ontario border through New Brunswick and Quebec and to Montreal, until the mid-fifties. Rail transport was slow and the processor plants of Atlantic Canada had to survive by serving the slow growth regional markets nearby and, even though Federal support did eventually provide greatly improved through-roads by the late fifties, the plants still remained 1,000 miles from some of the main markets of Central Canada.

b. Affiliated Groups

Independent food merchants, both wholesalers and retailers, were adversely affected by the rapid growth of food chain organizations, particularly in the 1920's. It became apparent that the survival of these independent merchants depended on their ability to duplicate some of the economic improvements ushered in by the chain store movement. The response of some of these independent businessmen was strong. In some cases, the initiative came from retailers. Groups of more progressive retailers in some areas banded together and created their own pre-retailing facilities, following rather closely, procedures developed by the chains.

b. Affiliated Groups - continued

In other situations, the initiative came from the more progresive wholesalers. Such wholesalers put together groups of independent retailers, co-ordinated the functions of both types of organizations, and offered most of the services provided by the chain warehouse. While there are some significant differences between "co-op" and "voluntary" groups, their operation and affect on market structure are sufficiently similar that they may be considered together as "affiliated independents". The development of the affiliated independent successfully duplicates most of the advantages of chain store organizations at wholesale, and retains the small business aggressiveness and flexibility at retail. It is one of the best examples of the combination of advantages of "big busines" and "small business".

c. Growth of Other Types of Food Retailers

i. Discount Food Stores

One of the most recent developments in food retailing has been discount food stores. Although not a major factor in the Canadian market, this style of retailing has taken hold on Canada's West Coast and is already well established in the United States where between 1960 and 1965 they grew from practically nothing to 5 percent of the food business.[7]

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7 "The True Look of the Super Market Industry, 1964" Supermarket Merchandising, May 1965.

c. Growth of Other Types of Food Retailers - continued

ii. Convenience Stores

Another recent development in food retailing has been the growth of "convenience" stores. These stores feature convenience of location, quick service, and long store hours. These attributes have enabled them to expand in the face of supermarket competition in spite of the narrower brand selection and somewhat higher prices. Some leading convenience store chains include; Beckers Milk and Mac's Milk in Ontario, and Perrette in Quebec.

7. Implications and Opportunities for Atlantic Region Processors

The tremendous growth of affiliated groups in recent years has implications for Atlantic Region processors. One of the more dynamic and well-known wholesale voluntaries is the Oshawa Wholesale Limited. Oshawa now owns or supplies 356 food outlets, of which 326 are I. G. A. markets - and their sales for 1969 will approximate $500,000,000. In the past year, Oshawa acquired Boland's Ltd. of Dartmouth, Nova Scotia, which has 50-plus I. G. A. outlets in the Atlantic Region and the Shop & Save chain in Quebec.

Oshawa Wholesale maintains that the small towns of Atlantic Canada are not suitable for Loblaw/Sobey style supermarkets, but ideal for I. G. A. relatively small independent stores. They are currently looking at growth

centres in the three provinces, for location opportunities for I. G. A. operators there. In this connection, it is of interest to note that Oshawa often builds I. G. A. stores, and makes them available for purchase or lease by prospective I. G. A. operators.

It is reasonable to suggest that the expansion of I. G. A. operations in Atlantic Canada in the months that lie ahead, should make Oshawa Wholesale a prime promotional target for the food processors there - and this might mean sales prospects for not only the regional and local store, but sales to Oshawa Wholesale for its expanding operations in Central Ontario as well.

Continual growth of the chain store type operation, especially in Ontario and British Columbia where they control 60 percent of food sales, and growth of the group wholesaler and of special buying groups, have increased concentration of retailers purchases of food. In 1968, the five largest retail chains controlled just over 40 percent of all retail food sales (Table 20). When the large group wholesalers are included, concentration of sales and purchases by these organizations becomes even more pronounced.

Just as development of these powerful buying organizations presents opportunities for processors, so too does it place the processors at a

disadvantage in their bargaining with these groups.

In some respects, Atlantic Region processors dealing in the local market are fortunate in that 37 percent of the retail sales are handled by almost 6,000 unaffiliated independents. (Table 19). Such a situation gives regional processors considerable bargaining power and selling leverage.

In Ontario, the situation is reversed. Sales to the mass market there, especially in the metropolitan areas, are made primarily through the chains and to a lesser extent, the affiliated groups. In Quebec, the volume movement takes place through the affiliated groups, with chain stores handling approximately one-third of the food sales.

TABLE 19

CANADIAN FOOD STORE SALES, 1968[1]
($'000)

	CHAINS[2]	GROUPS[3]	UNAFFILIATED[4] Independents	TOTAL
Atlantic Provinces				
No. of Stores	116	406	5,888	6,410
Dollar Sales	143,722	145,705	169,674	459,101
% of total	31.3%	31.7%	37.0%	100%
Quebec				
No. of Stores	415	3,072	7,513	11,000
Dollar Sales	585,633	785,063	334,855	1,705,551
% of total	34.3%	46.1%	19.6%	100%
Ontario				
No. of Stores	1,189	2,226	4,005	7,420
Dollar Sales	1,306,940	443,741	348,654	2,099,335
% of total	62.3%	21.1%	16.6%	100%
Manitoba				
No. of Stores	105	590	835	1,530
Dollar Sales	104,777	105,195	47,705	257,677
% of total	40.7%	40.8%	18.5%	100%
Saskatchewan				
No. of Stores	86	483	891	1,460
Dollar Sales	74,736	75,554	26,684	176,974
% of Total	42.2%	42.7%	15.1%	100%
Alberta				
No. of Stores	99	883	718	1,700
Dollar Sales	184,764	164,589	15,290	364,643
% of total	50.7%	45.1%	4.2%	100%
British Columbia				
No. of Stores	237	763	1,480	2,480
Dollar Sales	363,986	135,205	116,573	615,764
% of total	59.1%	22.0%	18.9%	100%
CANADA				
No. of Stores	2,247	8,423	21,330	32,000
Dollar Sales	2,764,558	1,855,052	1,059,435	5,679,045
% of total	48.7%	32.7%	18.6%	100%

1 Estimate based on nine-month D.B.S. figure for grocery and combination stores, and Canadian Grocer's 1968 Survey of Chains & Groups.

TABLE 19 CANADIAN FOOD STORE SALES, 1968 - continued

2 D.B.S. definition is four or more stores under single ownership. Above figures include corporate and individually owned chains and wholesaler-owned stores operating within voluntary groups. Jug milk convenience store chains are included.

3 Sales and store numbers from Canadian Grocer's 1968 survey of chains and groups, based on information supplied by group-sponsoring wholesalers.

4 This includes all grocery and combination stores not falling in above categories. Number of stores is calculated by deducting the chain and group numbers from total stores adjusted only slightly from the 1961 census.

Source: Canadian Grocer, February 1969.

TABLE 20 CONCENTRATION OF CHAIN STORE SALES IN CANADA -1968

	Sales ($ million)	Five largest Chains as Percent of Total
Five largest Corporate Food Chains[1]	2,368	-
Total Sales of Corporate Food Chains	2,764	85.7
Total Sales of All Food Stores	5,679	41.8

1 Dominion, Loblaws, Safeway, Steinberg's, and A & P.

Source: Canadian Grocer

THE U. S. FOOD MARKET

Canadian trade commissioners in New York City, Boston and Chicago, are in agreement that the world's most compact and affluent market for food products of all kinds is located in New England, New York, and the border states that are either immediately adjacent to our Atlantic Region, or close to the heartland of Central Canada.

And because of the size of this market and its proximity to processors in the Atlantic Provinces, it would appear to offer tremendous sales possibilities for products produced by Atlantic Region fruit and vegetable processors. The purpose of the following sections is to uncover opportunities for sales and the requirements for successful sales to that market.

1. The New England Food Market

a. Population

The New England Region of the United States comprises the six rather small states of Maine, New Hampshire, Vermont, Massachusetts, Connecticut and Rhode Island, and their area is only one-third the size of the four Atlantic Provinces of Canada. The population within this area in 1960 was just over one-half of the entire population of Canada or 10.5 million people (Table 21).

TABLE 21 POPULATION OF NEW ENGLAND STATES, APRIL 1, 1960

STATE	POPULATION
Massachusetts	5,148,578
New Hampshire	606,921
Maine	969,265
Connecticut	2,535,234
Rhode Island	859,488
Vermont	389,881
TOTAL, New England	10,500,000

Source: 1969 World Almanac

a. Population - continued

In 1960, the Boston metro area was ranked seventh in the U. S., and it dominates the entire New England region. With more than half the population of Massachusetts and one-fifth of the total population of New England, it is for certain "the hub" of the territory.

Because suburban sprawl is characteristic of New England, it is easier now to identify and assess metropolitan areas rather than the city centres of these areas. Set out in Table 22 are population figures for the main metro areas.

b. Retail Food Sales

Set out in Table 23 are sales figures for retail food stores in New England as of May 1, 1968.

Approximately one-half of all the food sales in New England are handled through corporate chain stores.

Table 24 sets out sales volume for seventeen (17) major chains in the Commonwealth of Massachusetts. This list discloses the major sales targets for those who are endeavouring to penetrate this market with processed food products from Atlantic Canada.

TABLE 22

POPULATION OF MAJOR METROPOLITAN CENTRES - NEW ENGLAND - APRIL 1, 1960.

CITY	POPULATION
Boston	2,590,000
Providence	816,000
Hartford	525,000
Springfield	479,000
Bridgeport	335,000
Worcester	323,000
New Haven	311,000
TOTAL	5,379,000

Source: 1969 World Almanac

TABLE 23

FOOD STORE SALES IN NEW ENGLAND, BY STATE, 1968

STATE	TOTAL VOLUME	PERCENT CHAINS
Massachusetts	$2,118,877,000	56.18%
Connecticut	1,188,693,000	46.16%
Rhode Island	320,765,000	70.97%
Maine	388,772,000	34.52%
New Hampshire	294,756,000	36.90%
Vermont	163,210,000	35.50%
TOTAL NEW ENGLAND	$4,475,073,000	

Source: Griffin Report

TABLE 24 VOLUME OF SALES FOR SEVENTEEN (17) MAJOR CHAINS - COMMONWEALTH OF MASSACHUSSETS.

RANKING	COMPANY	No. STORES	VOLUME
1	Stop & Shop	81	$287,664,000
2	First National	152	261,958,000
3	A & P	166	154,246,000
4	Star Market	32	117,260,000
5	Purity-Supreme	32	103,342,000
6	Fernandes	21	54,418,000
7	Demoulas	10	46,222,000
8	Iandoli/McCracken	15	37,362,000
9	Brockton Public	11	36,400,000
10	Almacs	7	22,100,000
11	Curtis Farms	18	21,500,000
12	Food Marts	9	18,620,000
13	Big G	4	10,400,000
14	Popular	5	8,580,000
15	Motts	2	7,000,000
16	Grand Union	5	5,616,000
17	Sampsons	1	780,000
17 chains		571	$1,193,468,000

Source: Griffin Report

1. The New England Food Market - continued

c. Institutional Food Sales

The institutional food market in the United States is large and consists of a conglomeration of over 500,000 places or establishments which make food available to consumers. The total gross sales of the institutional food sector are estimated to be $24 billion for 1963. Food purchases by these organizations is $11 to $12 billion annually.[1]

Table 25 lists the leading wholesalers in the New England area. These are the leading institutional sales organizations, and they are the first that the food brokers visit when selling to the institutional market.

The institutional market in the United States and Canada is similar in many respects and the reader is referred to a previous section dealing with the institutional market in Canada.

The institutional market should be of special interest to processors in the Atlantic Region because the institutional buyer is looking for quality products at low prices and has little interest in branded merchandise. This eliminates the necessity of a pre-sold, heavily advertised and promoted label, a pre-requisite to selling at the retail level - at least under a manufacturer's label.

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1 National Commission on Food Marketing, 1965, Technical Study No. 7.

TABLE 25 LEADING WHOLESALERS - NEW ENGLAND MARKET

NAME	SALES - 1966 ('000)	Sales - 1964 ('000)	Stores Serviced
Springfield Sugar	$280,000	$200,000	300
Viking	240,000	120,000	70
AG's N. H.	121,000	90,000	120
Food Center	100,000	100,000	200
Ferrera	100,000	100,000	200
New Eng. Grocer	100,000	100,000	200
Cressey-Dockham	100,000	50,000	110
Cross Companies	95,000	27,000	150
Hannaford Bros.	94,000	80,000	100
Roger Williams	90,000	75,000	130
Buy-Rite	75,000	90,000	50
C&S-Worcester	60,000	60,000	300
Gaer Bros.	60,000	60,000	250
Milliken-Tomlinson	51,000	46,000	93
AG's-Worcester	48,000	60,000	146
Burlington	41,000	19,000	280
J. Daren	40,000	23,000	200
Service Grocers	36,000	30,000	146
AG's-Wethersfield	35,000	35,000	100
S. Prawer	34,000	25,000	300
Bozzuto's	30,000	50,000	130
Cummings	30,000	30,000	150
Fairfield Co.	30,000	30,000	102
Holbrook	30,000	23,000	100
AG's-Maine	30,000	21,000	170
AG's-Nashua	25,000	9,000	52
French & Bean	25,000	19,000	200
Valley Wholesale	25,000	5,000	200
Laurans	25,000	50,000	250
Lewiston	25,000	25,000	300
United-Woburn	25,000	30,000	120
R. Distributors	20,000	20,000	75
TOTAL NEW ENGLAND MARKET: 57 Wholesalers:	$2,296,000	$1,924,000	8,819

Source: Griffin Report

2. The New York Food Market

Figure 6 is a map showing the major economic trading areas for New York State. Combined, they comprise the American megalopolis spreading from Buffalo, N. Y. to New York City, through Rochester, Syracuse, Albany, etc.

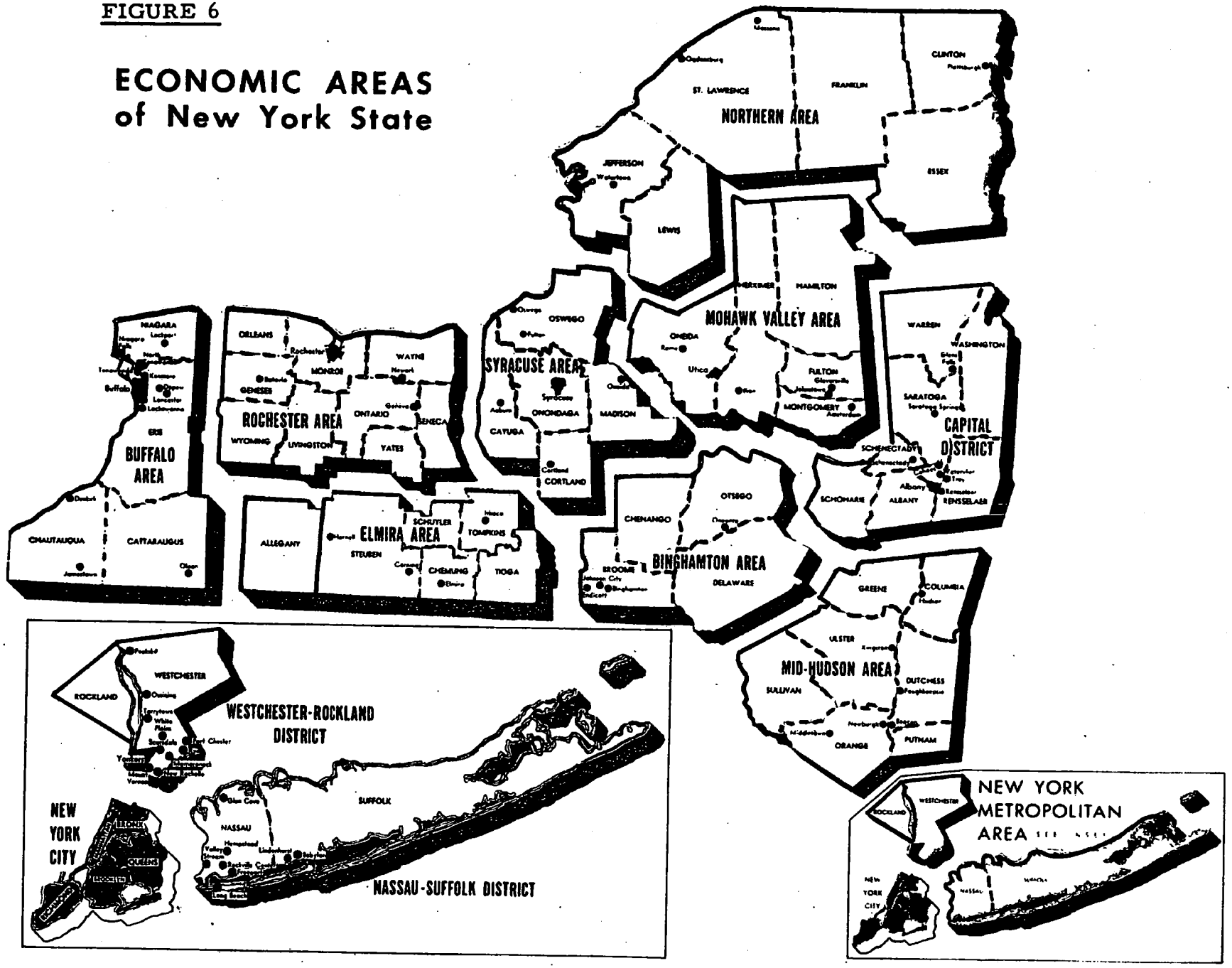
This densely populated State contains a market that is almost equal to all of Canada. It is our view that the exercise in marketing food products from Atlantic Canada would stand or fall in New England. For example, if the processors could not be competitive in apple products in Boston, they certainly could not be competitive in markets lying 200-300 miles westward, in New York State.

3. Marketing With Food Brokers

Sales managers for some Canadian food processing firms that are fortunately located inside the mass markets of Central Canada, are often able to sell directly to major customers, and "in house" personnel can, for the same reason, service these accounts with the minimum of difficulty and travel expenses.

But these advantages do not prevail when the packer endeavours to penetrate and develop his line of products in an export market that may seem to be relatively close to headquarters operations.

FIGURE 6


ECONOMIC AREAS
of New York State
NORTHERN AREA
ST. LAWRENCE
FRANKLIN
CLINTON
ESSEX
JEFFERSON
LEWIS
MOHAWK VALLEY AREA
HERKIMER
HAMILTON
ONEIDA
FULTON
MONTGOMERY
SYRACUSE AREA
OSWEGO
ONONDAGA
CAYUGA
MADISON
CORTLAND
CAPITAL DISTRICT
WARREN
WASHINGTON
SARATOGA
SCHENECTADY
SCHOHARIE
ALBANY
RENSSELAER
ROCHESTER AREA
ORLEANS
GENESEE
MONROE
WAYNE
ONTARIO
SENECA
WYOMING
LIVINGSTON
YATES
BUFFALO AREA
NIAGARA
ERIE
CHAUTAUQUA
CATTARAUGUS
ELMIRA AREA
ALLEGANY
STEUBEN
SCHUYLER
TOMPKINS
CHEMUNG
TIOGA
BINGHAMTON AREA
CHENANGO
OTSEGO
BROOME
DELAWARE
MID-HUDSON AREA
GREENE
COLUMBIA
ULSTER
SULLIVAN
DUTCHESS
ORANGE
PUTNAM
WESTCHESTER-ROCKLAND DISTRICT
WESTCHESTER
ROCKLAND
NEW YORK CITY
BRONX
QUEENS
NASSAU-SUFFOLK DISTRICT
SUFFOLK
NASSAU
NEW YORK METROPOLITAN AREA

3. Marketing With Food Brokers - continued

The "food broker" plays a vital role in developing export sales. He brings experience and close contacts with major buyers to the Canadian food processor, at once - and unlike "in house" personnel, he is paid only on actual sales. He becomes the agent and marketing manager because he knows the territory and the best methods practicable to enter it, develop sales and then service the accounts.

In the New England and New York State "regional" markets of the United States, there are several hundred direct accounts that must be covered by knowledgeable and capable sales personnel, working with the food brokers selected for each market.

Buyers for the chain food stores are just the first group of prospects for development - it's the major independents and the institutional wholesalers that make coverage of the field a full-scale, full-time, sales promotional programme in the massive, affluent, compact and highly competitive United States' markets.

While theorists are quick to suggest that savings are possible by "cutting out the middleman", our view is that the food broker's commission is money well spent - and this comment is relevant to food sales in Central Canada, i.e. the food processor in Atlantic Canada is still far removed from the headquarter buying offices of the major chains,

3. Marketing With Food Brokers - continued

and indications are that most of the processors who have secured a foothold for their branded lines in Central Canada have done so with a food broker's assistance.

In selecting a food broker, the Canadian principal may turn first to his knowledgeable colleagues in the food industry for comments. Sometimes trade association personnel can be helpful in this regard. Our recommendation is that valuable guidance to the right broker for a Made-In-Canada product is the trade commissioner and his staff for the regional market under study. The taxpayer processor should not, however, expect government trade officials to provide prospect lists or personally guided tours of chain store or wholesale buyer offices.

4. Market Strategy

In the previous chapters of this report, we have recorded the volume of sales in dollars by the leading wholesalers in the New England market, and have indicated how they serve the institutional market. The fact that these wholesalers and their institutional customers want quality goods at low prices, with assured volume deliveries - and that the source of supply, the name or label on the product, is secondary to these other considerations - should be stressed. In summation, one can make a

4. Market Strategy - continued

strong case for the use of regional food brokers to penetrate the institutional food markets of the United States at the wholesaler level of the distributive system. This is a fundamental recommendation to those concerned, as to U. S. market entry strategy.

We do not recommend that the food processors in Atlantic Canada approach the New England market in the conventional manner of using regional food brokers to penetrate the market at the retail level, with their own brands, through the chain food stores and the major independent food markets there. They would find great difficulty in providing for the required price discount and promotional advertising, that would be necessary for entry into this particular part of the market.

5. Tariff and Trade Factors

a. Tariff Schedules of the United States for Processed Food Products from Canada

There have been six major rounds of multi-lateral international negotiations under the General Agreement on Tariffs and Trade since 1947, and Canada has been involved - from the beginning - in all of these attempts to bring about freer trade via ever-diminishing tariff structures around the world.

a. Tariff Schedules of the United States for Processed Food Products from Canada - continued

The "Kennedy Round" (1964-67) was, however, far broader than the previous five rounds, because the expressed objective was to secure, where possible, a 50% cut in tariffs applicable then to most industrial and agricultural products - and U. S. negotiators went into these talks with authority to grant such reductions under President Kennedy's Trade Expansion Act of 1963. In due course, agreements were signed on June 30, 1967 and the first tariff cuts agreed to were implemented via rate reductions starting in January, 1968.

Because the total concessions granted on many items were phased downwards over a period of four years, staged rate reductions will, therefore, continue until 1972, when the new final rates will become effective.

Before commenting on the rate concessions granted by the United States that are applicable to the processed food items on the S. I. C. 112 list, let us first look at the concessions that were given by both Canada and the United States in the broad category of agricultural products, where there is trade both ways in these items and, in this way, put the concessions granted in "processed" food products in perspective.

a. Tariff Schedules of the United States for Processed Food Products from Canada - continued

Free entry was agreed to, by both Canada and the United States, for apples, turnips, maple sugar, maple syrup, certain berries, many grass and forage seeds, hay and straw. Duty rate reductions of 50 percent were made in fresh pork and carrots, and "out of season" rates were reduced or removed on certain fresh fruits and vegetables, including brussel sprouts, corn on the cob, green onions, sour cherries, and plums.

As for the rates applicable to processed fruit juices, Canada removed the 10 percent duty on lime and lemon juice, and reduced the rate applicable to orange, pineapple and grapefruit juice from 7-1/2 percent to 5 percent and, presumably for these concessions, the United States gave free entry to Canadian apple and pear juice.

There was a reduction on dried vegetables, pickled or preserved vegetables, vegetable juices (other than tomato), vegetable pastes and soups, from 20% to 17-1/2%.

Other reductions were given by the United States on cocoa and chocolate preparations, biscuits, oilseeds, and related products.

It is of great interest to note, however, that no concessions were granted to Canadian "vegetables, fresh, chilled or frozen, cut, sliced or

a. Tariff Schedules of the United States for Processed Food Products from Canada - continued

reduced in size but not otherwise prepared or preserved" because the U.S. tariff rate applicable via Item 138.00 (as quoted above) remains unchanged, at 17% ad valorem. Canadian frozen fried potatoes and the cole crops are, therefore, faced with a rate of duty that is prohibitive.

It is now appropriate to comment upon the items for which marketing opportunities should emerge in the United States, because of tariff rate concessions granted there to certain food products that are produced in Atlantic Canada.

i. Apple Juice

U.S. Tariff Item 165.15 covers fruit juices, including mixed fruit juices concentrated or not concentrated, whether sweetened or not. Apple and pear juice used to bear a rate of 0.5 cents per gallon. The current effective rate until the end of 1969 will be 0.3 cents per gallon, and it will be "free" in 1971, i.e. after three staged rate reductions only.

ii. Apple Products

U.S. Tariff Item 146.14 covers "prepared" or "preserved" apples. Prior to these GATT concessions, the rate against Canadian

ii. Apple Products - continued

processed apple products was 1.07 cents per pound. The current effective rate, until the end of 1969, will be 0.85 cents per pound, and the final rate, in 1972, will be 0.5 cents per pound. These are the rates applicable to apple sauce, apple slices, and other processed apple products such as "pie filling".

iii. Jams and Jellies

U.S. Tariff Item 153.04 covers jams and jellies made of "currants and other berries". The rate prior to GATT concessions was 6.5%. The new final rate will be 3 percent ad valorem. The current and effective rate until the end of 1969 will be 5 percent.

It is to be noted that the United States granted concessions on jams and jellies made of black currants, strawberries, blueberries, and other "currants and berries" only. The question as to whether these rates would cover "preserves" made from these berries and currants was raised, and an affirmative informal verbal decision received from the United States Customs food appraiser in Boston, Mass. "Preserves" as they are being sold in the New England sector of the United States market are, in fact, "a light, syrupy jam" (with berries crushed), rather than true "preserves" where the fruit is suspended in syrup.

iii. Jams and Jellies - continued

The rates against all other kinds of jellies, jams and marmalade remain unchanged at 8 percent ad valorem under Tariff Item 153.00.

"Kennedy Round" concessions, and these relatively low rates against other jams and jellies, suggest that further market research is warranted in connection with these lines of processed fruit products.

iv. Canned Fruit

The tariff rates applicable to canned berries, i.e. blueberries, raspberries, strawberries, and cranberries, are as follows;

(1) Blueberries are covered by Tariff Item 146.50, that currently calls for a rate of 0.5 cents per pound for the berries when they are "fresh or in brine". Through staged rate reductions, the final rate will be 0.3 cents per pound.
When frozen, blueberries are specifically covered again in the schedule, by Tariff Item 146.68, and the rate on this item is 4.5 percent ad valorem - and, through staged rate reduction, this item goes down to 3 percent in 1972.

(2) Strawberries, raspberries, and cranberries, are not specifically covered in the series of items covering "berries, fresh, prepared or preserved", so they must be placed under Item 146.75, that provides coverage for

iv. Canned Fruit - continued

"other berries" at 14 percent ad valorem. There will be no lower rate in the future.

(3) As for mixed fruits, where two or more lines are combined to produce a "fruit salad" mixture, the U.S. tariff rate applicable is 17.5 percent ad valorem, under Item 150.00.

v. Baked Food Products

U.S. Tariff Item 182.20 covers "biscuits, cake, cakes, wafers and similar baked products and puddings, all the foregoing by whatever name known, and whether or not containing chocolate, fruit, nuts or confectionery". This item can be identified as a "basket item", inserted to provide coverage for a very wide list of bake products including pies, cakes, tarts and puddings, in addition to plain and fancy biscuits or biscuit-type chocolate bars.

The question as to whether this item would cover baked fruit pies and tarts, secured an affirmative informal decision from the United States Customs food appraiser in Boston.

Prior to the GATT concessions, the rate applicable to goods covered by Tariff Item 182.20 was 6.5 percent ad valorem. The current

v. Baked Food Products - continued

effective rate until the end of 1969 is 5 percent, and the final rate in 1972 will be 3 percent ad valorem.

There seems to be market opportunities for three segments of the Food Industry in Atlantic Canada, through the concessions granted on this 182.20 item, i.e. baked goods, confectionery, and for the fruit growers who would serve the industrial bakers, who should look into the potential for all of the items that can be produced and shipped into the United States through this item.

vi. Sauces and Pickles

There are two items in the U.S. tariff schedules that cover imported "sauces", 182.45 and 182.46, and even though there are many popular lines of sauces, such as Soy Sauce, H.P. Sauce, Tartar and Bernaise Sauce, etc., "Thin Soy Sauce" is covered specifically by Item 182.45, and all other sauces are covered by 182.46.

Prior to "Kennedy Round" concessions, products cleared through 182.46 were subjected to a U.S. duty rate of 15 percent ad valorem. The effective rate until the end of 1969 will be 12 percent, and the final rate in 1972 will be 7.5 percent ad valorem.

vi. Sauces and Pickles - continued

If, therefore, the premium on U.S. funds is still available to Canadian exporters in 1972, this rate concession on sauces will be the equivalent of free entry for these particular food products when the final staged rate becomes effective, in three years' time.

Pickles are classified for duty purposes by a series of items in Schedule One, Part 8, sub-part C., of the U.S. tariff schedule, where "vegetables, packed in salt, in brine, pickled or otherwise prepared or preserved", are covered. In the head note applicable to these items, the term "pickled" is said to mean "prepared or preserved in vinegar or acetic acid, whether or not packed in oil or containing sugar, salt or spices".

Tariff Item 141.25 specifically covers sauerkraut (pickled cabbage) at a rate of 9 percent ad valorem for 1969, going down, through staged reductions, to 7.5 percent ad valorem in 1972. Tariff Item 141.45 specifically covers onions "packed in salt, in brine or pickled" at a rate of 8 percent ad valorem, and it will go no lower via staged rates in the future.

Because there are many ways that pickled vegetables can be mixed, to produce a line of branded or private label pickles, the Canadian food

vi. Sauces and Pickles - continued

processor would have to submit samples of his produce for inspection, for classification purposes, and it is likely that U. S. Customs would classify the "pickles" in accordance with the vegetable material of major value in the mix.

vii. Blueberries

The United States gave concessions in the rates applicable to fresh and frozen blueberries. Prior to the "Kennedy Round", the fresh berries were cleared through Tariff Item 146. 50 at 0. 7 cents per pound, and the frozen variety was cleared through Tariff Item 146. 68, at 6 percent ad valorem.

Until the end of 1069; the rate against "fresh" will be 0. 5 cents per pound, and the frozen berries will clear at 4. 5 percent ad valorem. Through staged reductions, the fresh berries will go down to a final rate of 0. 3 cents per pound, and frozen berries will clear at 3 percent ad valorem in 1972.

One is referred to another rate concession for blueberries in the commentary on jams and jellies made of currants and berries.

a. Tariff Schedules of the United States for Processed Food Products from Canada - continued

viii. Peas - Potatoes - Turnips

The U. S. tariff rates applicable to canned vegetables, including peas, potatoes and turnips "in tins", are within the same series of items referred to above, in the commentary on "pickles".

In the case of peas, there are three items, i. e.

141. 35 for "chick peas or garbanzos" at 0. 9 cents per pound on entire contents of container;

141. 40 for "blackeye cow peas" at 2. 4 cents per pound on entire contents of container; and

141. 55 covers all other kinds of canned peas at 1 cent per pound on entire contents of container.

Rate concessions were offered on peas covered by 141. 35. Through staged reductions, the final rate on this item will be 0. 75 cents per pound. The 141. 40 rate, currently at 2. 4 cents, will go down to 1. 5 cents per pound in 1972. There will be no further rate reduction on 141. 55. Peas other than the chick pea or blackeye, will remain subject to 1 cent per pound on the entire contents of the container.

Because there is no specific coverage for canned whole potatoes, sliced potatoes, etc., or turnips in a similar form, they must be cleared through U. S. Customs under Tariff Item 141. 81 as "other vegetables" at

viii. Peas - Potatoes - Turnips - continued

17.5 percent ad valorem, and U.S. negotiators refused to offer any future rate reductions on this particular item, as far as Canadian exporters are concerned.

Food processors and packers in Atlantic Canada must keep in mind that the approved "Kennedy Round" rate reductions were agreed to by senior Federal Government trade and finance officials, after long discussions with representatives of Canadian industry, who must assume some responsibility for the relatively high U.S. tariff rates that remain in effect against our frozen and canned vegetables at this time.

ix. Processed Potatoes

Tariff rate concessions were granted on potato flour and on potatoes in a dried or desiccated form as set out below:

U.S. Tariff Item 140.70 covers potatoes when they are reduced to flour, at a rate of 2 cents per lb. until the end of 1969. The final new reduced rate of 1,2 cents per lb. will become effective in 1972.

U.S. Tariff Item 140.50 covers potatoes in a dried, desiccated or dehydrated form, and the rate applicable to potatoes produced in this manner for export, will be 2.2 cents per lb. until the end of 1969, with the final new rate of 1.3 cents per pound becoming effective in 1972.

a. Tariff Schedules of the United States for Processed Food Products from Canada - continued

x. Cole Crops

Because a special interest exists in "the cole crops" of Atlantic Canada, a separate note on the tariff treatment of the frozen cauliflower, broccoli, and brussel sprouts by the United States Bureau of Customs is presented.

Because broccoli and cauliflower are both "reduced in size" by cutting or slicing prior to packaging and freezing for the market, these two "vegetables" come promptly under U. S. Tariff Item 138.00, where the rate against both of them is 17-1/2 percent ad valorem.

In the case of brussel sprouts, however, this vegetable is not reduced in size prior to packaging and freezing, therefore, it cannot be accommodated under Item 138.00 along with the other two cole crop vegetables. It must be placed under the basket item for "other" vegetables, i.e. U.S. Tariff Item 137.85, where the qualifying words are "fresh, chilled or frozen" only - and the rate is set at a prohibitive 25 percent ad valorem.

xi. Pet Foods

Because the United States saw fit to grant tariff rate concessions in connection with certain kinds of pet foods that might be made by

xi. Pet Foods - continued

processors in Atlantic Canada, a comment now on these highly marketable "food products" is warranted.

Pet foods are covered for tariff purposes under Schedule 1, Part 15, Sub-part C, of the schedule, by six items. United States negotiators granted "Free Entry" for the products that can be cleared through Item 184.70.20 only, and the wording of this item is

> "By products from the milling of grains, mixed feeds and mixed feed ingredients - Pet Food packaged for retail sale."

The rate applicable until the end of 1969 is 1 percent ad valorem. The free rate will be effective in January 1971.

Other pet foods, not specifically provided for in the schedule, will go down to a 5 percent rate in 1972, from the current (1969) rate of 9 ad valorem.

"Kennedy Round" concessions, and these relatively low rates against "other" pet foods, suggest that further market research is warranted in connection with these high volume lines of processed animal food.

5. Tariff and Trade Factors - continued

b. Non-Tariff Barriers To Canada/United States Trade in Processed Food Products

It is possible that investigations with regard to the export potential for other "manufactured" Canadian products have disclosed certain "non-tariff barriers" to our trade with certain countries. However, in the case of exporting processed food products, there does not seem to be substantial grounds for suggesting that there are non-tariff barriers lying beyond the U.S. tariff schedule, to inhibit or forestall trade in these products between Canada and the United States.

The United States' requirements regarding labelling and inspection of food products are no more exclusive than our Canadian regulations against similar products being exported from Florida or California into Central Canada. In some instances, the Canadian firm may not be readily able to meet the regulations in question, generally speaking, however, they are restrictive regulations, clearly written and easily understood. They are a nuisance, rather than a deterrent to trade.

These Food and Drug Administration regulations as to labelling and inspection are on the books, in practice, however, one finds that Customs officials invoke their prerogatives at rare and irregular intervals only. A high degree of co-operation prevails, and the Canadian regulations forcibly bring the situation into balance - leaving United States

b. Non-Tariff Barriers To Canada/United States
Trade in Processed Food Products - continued

Customs officials, and their counterparts in Canada, free to search, find and deal with outright, evaders or violators of the United States or Canadian regulations.

As for delays in securing binding decisions, once again it is a case of dealing directly with the appropriate officials, with applications containing the maximum of information required to secure such a ruling.

Close co-operation with our Canadian trade officials in their regional or Washington offices, will facilitate the issuance of the official ruling.

There have been reports by Canadian food processors of contrived and conscious delays by U.S. Customs officials in issuing binding decisions regarding the classification or acceptance of Canadian food products for Customs duty purposes. Although such may be the case in some instances, it would be incorrect to suggest that there are major non-tariff barriers to Canada - U.S. trade in this area.

There are several trucking firms that specialize in Canada/United States transport of consumer goods. They are bonded carriers, familiar with the routes and the Customs regulations regarding the

b. Non-Tariff Barriers To Canada/United States Trade in Processed Food Products - continued

clearance of their loads at the border crossing point.

Although there have been recently reported findings suggesting that there are barriers to Canada/United States trade in this area, they are not a major obstacle to trade between Atlantic Canada and the United States.

c. U.S. Customs Regulations - Price Lists

Fundamental to a Canada/United States export programme in any kind of processed food product, is a detailed and dated Canadian "Price List", with complete information as to any and all volume discounts offered to the various levels of trade in Canada.

This is the information required by United States Customs officials when they go about checking the "values for duty" contained on the exporter's invoices, and they insist upon tangible evidence that bona fide sales have been made or offered in Canada, to a corporate chain or to a wholesaler if the export shipment under review is directed to that level of trade in the United States.

Prior to calculating "duties payable" (using the rates appropriate to the product), the exporter must translate his invoice price into U.S. funds.

c. U.S. Customs Regulations - Price Lists - continued

Because U.S. chain store buyers, and U.S. wholesalers, like to do business on a "laid down" basis in their cities, Canadian exporters often give the U.S. buyer a price quotation on that basis and, in so doing, the end price contains the U.S. duty against not only the product but the Canada/United States transportation costs as well. This can be avoided by quoting the American buyer two ways:-

(1) F.O.B. the plant in Atlantic Canada, and

(2) Laid down destination U.S.

This must be covered beforehand, i.e. prior to the date when the Canadian exporter is asked for his "list prices" by the U.S. Customs authorities, as set out above. In conclusion on this item, the Canadian food exporter states, "This is the way I offer my line of products, and my customer in the United States is prepared to buy F.O.B. plant."

U.S. Customs tariff rates are applicable to the invoice values as recorded on the Canadian shipping documents, in U.S. funds. They are applicable to the product, the containers, the cartons, and other charges (trucking) up to the United States/Canada border. They are not applicable to charges incurred after the shipment clears through a United States port of entry, i.e. shipping charges from the border to warehouse, insurance inside the United States, or warehouse charges

c. U.S. Customs Regulations - Price Lists - continued

that might accrue while the product awaits final delivery to a United States chain store or institutional customer.

Binding decisions on every food item, as to their tariff classification, should be developed and secured from the Director of United States Customs in Washington, D.C., prior to promotional sales negotiations in the U.S. food market, because the chain store buyer or wholesaler serving the institutional market insists upon dealing in specifics, i.e. samples of the product and complete details as to "laid down" costs to him for the lines in question.

Knowledgeable export sales managers use the closest, smallest, United States/Canada port of entry, and develop a personal relationship with the appraisers there who inspect and clear their goods. In some instances, they personally escort their first major shipments through the crossing point, to guarantee minimum delays and difficulties there.

The selection of an experienced, bonded, trucking firm that is familiar with the best route to market, and a firm that is well and favourably known to Customs officials at the border, is also relevant to moving Canadian food products through the U.S. Customs Tariff apparatus.

c. U.S. Customs Regulations - Price Lists - continued

A special Customs Invoice (Customs Form 5515) is required in connection with the entry of every shipment consisting of articles having an aggregate value in excess of $500, and subject to an ad valorem rate of duty or to a rate of duty depending in any manner upon its value.

In the case of food samples having an aggregate value of less than $500, or on duty-free shipments or on shipments of articles subject to specific rates of duty, copies of the commercial invoice are sufficient.

While only one copy of either the commercial invoice or customs Form 5155 is required by the regulations, it is usually convenient to forward three copies of the customs invoice; one to be used by Customs at time of examination of the goods; one to accompany the entry papers, and one for the customs broker's file.

As for the payment of duties, this can be done only at the time when the export shipment clears through U.S. Customs, and this important agency function is generally carried out by a person or customs brokerage firm certified by the carrier bringing the goods to the port of entry "to be the owner of the goods for customs duty purposes". There is no provision under which duties may be prepaid in Canada, prior to exportation to the United States.

5. Tariff and Trade Factors - continued

d. Labelling Regulations

Food processors in Atlantic Canada who desire to sell canned goods or other processed food products in the United States, must comply with the requirements of:

(1) The U.S. Food, Drug and Cosmetic Act;

(2) The U.S. Fair Packaging and Labelling Act,

because both of these Acts contain provisions that apply to "imported goods", as well as Made-In-U.S.A. food products that are involved in inter-state commerce.

The regulations with regard to food standards, and labelling, as they are applicable to the S.I.C. 112 list of food items, are enforced by the Food and Drug Administration within the U.S. Department of Health, Education and Welfare - and the F.D.A. operates regional offices in Boston and Buffalo, to service the needs of Canadian food product exporters with marketing problems or prospects in New England and New York State.

Because Canadian fruit and vegetable processors must comply with the requirements and regulations covered by the Agricultural Products Standards Act of Canada, they will have little or no trouble in meeting the standards of quality called for by the U.S. Food and Drug Act.

d. Labelling Regulations - continued

In the area of labelling, however, they may experience some difficulty because the highly competitive U.S. packaged food industry is still adjusting to the new regulations contained in the Fair Packaging and Labelling Act of 1966, that became effective as of January 1, 1968.

The most fundamental U.S. requirement in labelling calls for the imported food product to be clearly marked as to the country of origin, and this information must be located on the lable, in close proximity to the declarations as to the net weight of contents and ingredients.

A dual declaration of contents is required for dry packages containing from one to four pounds, or containers that hold food products in liquid from 1 pint to 1 gallon. 1-1/2 pounds must be shown as - Net Weight 24 oz. (1 lb. 8 oz.) - and liquid content would be expressed in a similar manner, and these details must be in the official U.S. measurement.

Terms such as, giant, jumbo, or full - formerly used to qualify a unit of weight - are no longer permitted, and the mixture of ingredients must be shown in decreasing order of volume or value.

It is of special interest to note that the F.D.A. does not present itself as a restrictive agency, with the power to approve or refuse entry

d. Labelling Regulations - continued

to a given food product. They offer "advice" to exporters as to whether or not the products "comply" with the provisions of these two Acts, and that is why personal interviews with F.D.A. officials, prior to the shipment of goods, are essential.

As to F.D.A. inspection of goods at the border, the U.S. Government "reserves the right to do so" but exercises this privilege only at irregular intervals. If inspection shows that the imported food items comply with regulations, the United States Government pays for the product destroyed in testing. There is, however, a high degree of close co-operation between United States and Canadian authorities in this area, because of the large volume of U.S. canned goods and processed food products that are shipped north into Canada from U.S. plants.

Elsewhere in this report, we have commented upon the popular sizes of containers being used by United States packers and processors to serve the United States market. The net weight that these containers hold is expressed in the official U.S. measurement and this must be kept in mind when Canadian food processors quote on these sizes, and endeavour to bring their labelling for No. 303 or No. 10 tins into line with U.S. requirements as set out above.

5. Tariff and Trade Factors - continued

e. Canadian Trade Offices - United States

The Canadian Government now operates Trade Commissioner offices in New York, Boston, Cleveland, Chicago, Detroit, Los Angeles, Philadelphia, and Washington. Experienced and skilful specialists in Canada/United States trade are, therefore, available for consultation in connection with the spectrum of marketing problems that may arise as a prospective Canadian food product exporter looks at a segment of the United States market, for the first time.

These departmental officials can offer valuable guideline suggestions as to the nature and structure of their regional markets, and save the Canadian exporter time and dollars in his search for the right broker or agent to handle his particular line in their area.

We urge both federal and provincial officials to keep these particular trade specialists fully advised as to future research and action.

THE UNITED KINGDOM MARKET

1. The U. K. Market for Frozen Fruits and Vegetables

The main frozen vegetable items sold in the U.K. are green peas, french fried potatoes, beans and brussel sprouts. Domestic production accounts for at least 80% of each item except on french fried potatoes where domestic production is approximately 60% of requirements.[1]

Recently, there has been a concerted drive to increase domestic production of processed vegetables. There have been several new plants built in the past year to produce frozen potato products. Two of the largest were established by McCain Foods Limited and Potato Services Inc. The potential export of Canadian potato processors will be markedly diminished as these new plants come into full production. Particularly, since the market for quick frozen potato products is relatively small on a per capita basis as compared to U.S. or Canada.

Similarly with other vegetable items, there is potential for much further expansion of local production and the drive to reduce imports will hasten the expansion of production facilities for these products.

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1 National Food Survey, U.K. 1966

1. The U.K. Market for Frozen Fruits and Vegetables - continued

Traditionally, the U.K. industry has tended to produce some 80% of requirements on an item such as green peas, filling in the balance with imports from abroad. In years of reduced crops locally, an opportunity has been afforded for increased sales from Canadian sources. Competition at this time has come mainly from Australia, Sweden, Holland and the U.S. This type of sales opportunity will likely continue to exist but possibly on a reduced scale as more emphasis is placed on local production.

Frozen fruits are a minor factor in the U.K. market. Domestic production is in the area of 1,000 tons of frozen fruits of all types. Since Canada is an importing nation on most processed fruit items, export markets for frozen fruit items are not of current importance.

2. The U.K. Market for Canned Goods

Canada has enjoyed a substantial market for a variety of canned fruits and vegetables in the U.K. Solid pack apples have been sold in substantial volume, particularly to the catering trade. The Canadian product is of excellent quality and top market prices have been obtained. However, in recent years, strong competition has developed from local companies, in Holland, Belgium, Italy and Japan. Most of these imports

2. The U.K. Market for Canned Goods - continued

have been of a lower quality, but have been offered at a very low price. This competition has had an adverse affect on sales from Canada, particularly since devaluation.

Canada has been exporting a substantial quantity of fruit pie fillers to the U.K. but sales have been reduced drastically since the currency devaluation. Exports of canned pears are now of little significance as it has been very difficult for Canadian companies to compete on price and quality against imports from Australia and South Africa.

There has been a demand in the U.K. for certain Canadian produced canned vegetables, particularly canned corn, with a lesser volume of asparagus, green beans and small whole potatoes.

Small whole potatoes are a major item in the U.K. Canada gained a share of this market but the product offered was of a different type to that imported from European countries. The U.K. market prefers a yellow fleshed variety commonly produced in Europe. This is a markedly different product from the small whole potato canned in Canada. The Canadian pack originates from raw product graded out on a size basis from the table stock which is white fleshed. Most Canadian companies have been using a lye peeling process in contrast to steam peeling which

TABLE 26

CANADIAN EXPORTS OF SELECTED CANNED FRUITS AND VEGETABLES TO THE UNITED KINGDOM, 1967 and 1968.

Product	1967	1968
	($'000)	
Apples	1,419,000	551,000
Cherries	817,000	278,000
Fruit pie fillers	532,000	253,000
Pears	104,000	44,000
Peaches	30,000	10,000
Apple juice	95,000	57,000
Other fruit	424,000	127,000
Corn	2,341,000	2,633,000
Asparagus	*	623,000
Green beans	433,000	370,000
Potatoes	*	161,000
Wax beans	65,000	7,000

* Not available.

Source: Exports by Commodities, No. 65-004, D. B. S., Ottawa.

TABLE 27

CANADIAN EXPORTS OF SELECTED FROZEN FRUITS AND VEGETABLES TO THE UNITED KINGDOM, JAN. - APR. '68 & '69

PRODUCT	VALUE $	
	Jan. - Apr. '68	Jan. - Apr. '69
Potato products	1,819,000	425,000
Peas	433,000	139,000
Vegetables (miscellaneous)	143,000	85,000
Beans, green & wax	20,000	67,000
Fruits & berries	63,000	7,000

Source: Exports by Commodities, No. 65-004, D.B.S., Ottawa.

is most common in Europe. The latter process is considered superior for small whole potatoes. Sweden and Denmark have the quality market on this product with middle European countries selling a similar but lower quality product on a price basis.

It would appear that a continuing market can be expected on canned vegetables but the possibility of developing additional substantial sales in the U.K. market has definite limitations. The combination of factors giving rise to such an assessment are:- policy of increased domestic production in the U.K., competition with occasionally subsidized imports and with other exporting nations having low wage and raw material prices, and basic quality problems on certain items.

THE WEST GERMAN MARKET

Western Germany has developed into a substantial market for certain processed fruit and vegetables, particularly canned wax beans and sour cherries. The Canadian product competes with imports from a number of other countries, necessitating very competitive pricing.

In the case of canned wax beans, the main competition is from U.S. and Italian sources of supply. Yearly volume purchased has fluctuated widely and the market cannot be considered too stable. From

The West German Market

a high of approximately 30 million pounds in 1965, exports fell off to 13 million pounds in 1967, but rose again to 21 million pounds in 1968. Value of sales of canned wax beans to this market in 1968 amounted to just over $2 million. The major part of these exports originates in the Province of Quebec. Although this is not a lucrative market, it is possible that Atlantic Region canners should attempt to secure a greater share of this volume. However, no firm should concentrate on this market as a major outlet for their production. Substantial quantities of canned sour cherries have also been exported to this market from British Columbia and Ontario. The market for other canned fruits and vegetables is extremely limited.

In the case of frozen foods, the marketing channels and retail outlets are dominated by two very large international firms controlling at least 80% of the market. The only opportunity would appear to be the occasional bulk sale for repacking, particularly if a crop shortage develops in European countries normally supplying the market.

Entry into this market for all Canadian processed fruit and vegetables is hampered by substantial import duties, as well as trade barriers such as import licences and stringent labelling requirements.

ADEQUACY OF MARKETING FACILITIES

1. Transportation

a. Introduction

Traditionally, it has been assumed that the major handicap to marketing of Atlantic Region processed food products in Central Canada was the high cost of transportation. It cannot be denied that transportation costs for the Atlantic Region processor competing in Central Canada are higher than those of a processor located within the market. It has been suggested that total distribution costs rather than basic transportation costs are the main problem facing Atlantic Region manufacturers serving the Central Canadian market. Undoubtedly, this is true for manufacturers maintaining warehouse stocks involving local deliveries; local service organizations, etc. However, in the case of food processors the major outlets are a few giant retail organizations. These firms buy primarily on a direct delivery basis to a central warehouse. In this regard basic transportation cost is of greater importance than total distribution costs. The problems and relative importance of transportation in each of the three Atlantic provinces in which processing plants are located will be discussed on an individual basis.

b. Adequacy of Transportation Services

i. Nova Scotia

A very high percentage of the canned goods produced in Nova Scotia

i. Nova Scotia - continued

are shipped by rail. This is due in part to agreed charges covering 85 percent of shipments, with the railroads. Most large central Canadian supermarket chains will not accept rail deliveries and this condition has resulted in an increasing part of this business being diverted to trucking firms. In general, processors have indicated satisfaction with rail service where it is applicable. It would appear however that with trucking lines providing door-to-door delivery at comparable rates to rail service and with a reduction in delivery time of substantial proportion, a much greater diversion to this mode of transportation will occur in the future.

A limiting factor in truck transportation has been the limited commercial capacity of the Digby-Saint John Ferry. Processors in the Annapolis Valley feel that they could sell appreciably more products in Central Canada if this service was improved.

Major canners find that transportation costs within the Atlantic Region are high since most shipments have to be made on a less than carload basis to facilitate distribution to a large number of small centers of population.

TABLE 28 TRANSPORTATION RATES FOR CANNED GOODS OUT OF NOVA SCOTIA (per cwt)

Kentville, N.S. to:	Montreal	Toronto	Boston[1]
	VIA RAIL*		
30,000 lbs.	$0.84	$1.17	$2.23
40,000 lbs.	$0.81	$1.11	$2.23
60,000 lbs.	$0.76	$0.99	$1.19[2]
80,000 lbs.	$0.73	$0.95	$1.19[2]
	VIA TRUCK		
40,000 lbs.	$0.77	$1,06	$1.52

* Agreed Charge No. 745

1 General Commodity rate to Boston $2.23 per cwt. for shipments of 36,000 lbs. or over.

2 Specific rate established for a range of apple products in varying containers. Minimum 60,000 lbs.

Source:

Atlantic Provinces Transportation Study, CPR Rate Department (E.I.U.)

b. Adequacy of Transportation Services - continued

ii. Prince Edward Island

Over 90 percent of frozen food shipments from Prince Edward Island are handled by truck. Processors in general are dissatisfied with rail service due to a lack of suitable mechanically refrigerated cars and serious delays in providing cars. However, the type of service required favours truck transportation as buyers can usually handle full truckloads and demand two-day delivery to Central Canada. Rail facilities are used almost exclusively for shipments to Western Canada. The distribution of products from Prince Edward Island food freezers is approximately as follows:

To P.E.I. Markets	10 percent
Other Maritime Markets	15 percent
Ontario and Quebec Markets	30 percent
Western Canada Markets	20 percent
Exports	25 percent

With relatively low sales in the Atlantic Provinces, costs of transportation become a significant factor. Low sales in other Atlantic Provinces by P.E.I. producers are attributed to competition from processors in New Brunswick and Nova Scotia.

ii. Prince Edward Island - continued

Local road restrictions in the Spring and erratic ferry service due to ice conditions have contributed to restricted trucking service at certain times in the Spring. Locally produced canned vegetable products are mainly sold in the Maritime provinces with approximately 15 percent being sold in Central Canada. The export volume on canned goods from this area is extremely limited.

TABLE 29 TRANSPORTATION RATES FOR FROZEN FOODS OUT OF PRINCE EDWARD ISLAND (per cwt.)

VIA RAIL

Sherwood, P.E.I. to:	Montreal	Toronto
30,000 lbs.	$1.72	$2.09
40,000 lbs.	$1.32	$1.60
60,000 lbs.	$1.03	$1.30
80,000 lbs.	$0.96	$1.22

VIA TRUCK

30,000 lbs.	$1.10	$1.40
40,000 lbs.	--	$1.30

Source:

Maritimes Transportation Commission
Atlantic Provinces Transportation Study.

b. Adequacy of Transportation Services - continued

iii. New Brunswick

Transportation of processed fruit and vegetable products from New Brunswick to points in the Maritimes and Central Canada is handled primarily by truck. This is due in part to the insistance by large buyers of rapid delivery and to lack of rail facilities by these same buyers. Transportation to Western Canada is normally by rail.

Transportation is less of a factor to New Brunswick processors than for plants in Nova Scotia and P. E. I. Mileage to the major markets in Central Canada is considerably less and ferry service is not a factor.

TABLE 30 TRANSPORTATION RATES FOR FROZEN FOODS OUT OF NEW BRUNSWICK (per cwt.)

	VIA RAIL[1]	
Florenceville, N.B. to:	Montreal	Toronto
60,000 lbs.	$0.75	$1.06
80,000 lbs.	$0.69	$1.00
100,000 lbs.	$0.66	$0.96
	VIA TRUCK	
30,000 lbs.	$0.76	$1.15
38,000 lbs.	--	$1.05

[1] Effective April 1, 1969

Source: Day & Ross Limited, truck rates; and, CPR rate department, rail rates.

1. Transportation - continued.

c. Atlantic Region Transportation Costs as a Competitive Factor in Servicing Various Markets.

i. The Montreal Area Market.

Fruit and vegetable processors in the Annapolis Valley of Nova Scotia are in a position to deliver their products to Montreal for $0.76 to $0.77/cwt., either by 60,000 lb. rail car or 30,000 lb. truckload. In contrast, the major Ontario packers located in Essex and Kent counties have a truck rate to Montreal from Chatham of $1.19/cwt. for 30,000 lbs. or $1.08/cwt. for 40,000 lbs. Obviously, from the standpoint of supplying the Montreal area market, Nova Scotian canners are in a more favourable position. However, some Ontario canners have plants located in Eastern Ontario and therefore may be in a position to service this market at comparable prices.

Quebec food processors have relatively lower transportation rates in servicing this market with truck rates of $0.35 to $0.50/cwt. However, the major volume canned product in the Annapolis Valley is apple products. With the exception of apple juice, Quebec does not have any sizeable plant canning apple products. On these products, Nova Scotian canners are not at a disadvantage from a transportation standpoint as their main competition is from Ontario and British Columbia processors.

i. The Montreal Area Market - continued

Frozen food processors have a rate of $1.10/cwt. for 30,000 lb. shipments out of P.E.I. to the Montreal market. Rates from the major New Brunswick processor to the same market are $0.76 per cwt. The main competition in the Montreal market on this class of product originates in Ontario from centres such as Brantford and Essex County locations. The lowest truck rate from Essex County is $1.40/cwt. Obviously, Atlantic Region processors are not at a disadvantage in servicing this market.

ii. The Toronto Area Market

Canners in the Annapolis Valley have a rail rate of $0.99/cwt. on 60,000 lb. carloads and $0.95/cwt. on 80,000 lb. carloads. In contrast the major Ontario canners in the Chatham area have a truck rate of $0.38/cwt. on 30,000 lb. loads and $0.35/cwt. on 40,000 lb. loads. It is somewhat doubtful whether any other processing area in Ontario has a lower rate since trucking firms usually insist on this level of charge even for short hauls. Obviously, Maritime processors operate under a transport differential of $0.61/cwt. to $0.68/cwt. in meeting competition in the Toronto market. There are compensating factors which help to offset this transportation differential and which will be reviewed elsewhere.

ii. The Toronto Area Market - continued

Frozen food processors also have a transport differential in servicing the Toronto market. Truck transport from P.E.I. plants is $1.40/cwt. on 30,000 lbs. and $1.30/cwt. on 40,000 lbs. In contrast, Ontario processors of similar products can ship at levels of $0.50 to $0.65/cwt; a cost advantage of $0.75 to $0.90/cwt.

iii. The Boston area Market.

Transportation costs to the Boston area market are higher than those to Central Canada but not significantly. A 60,000 lb. carload of canned goods (apple products) originating in the Annapolis Valley can be shipped to Toronto for $0.99/cwt. whereas the comparable rate to Boston is $1.19/cwt. A differential of $0.20/cwt. Trucking rates are somewhat higher than rail transportation rates to this market; however, this form of transport is useful for less than full carloads. A means of transportation which should be investigated is the use of so-called "gypsy truckers" who bring in truckloads of perishable products from the southern U.S. to the Maritime market. These operators are frequently on the lookout for return loads and are in a position to offer attractive rates.

iii. The Boston Area Market - continued

The traditional sources of supply for apple products to the Boston market are from processors located in New York, Virginia and Wisconsin. Although processors in New York State would have somewhat lower transportation rates, products originating in the two other states would have rates comparable to those of Annapolis Valley processors.

2. Storage Facilities

a. Canned Goods

Storage of canned goods at the various processing plants is not a serious problem since canned goods can be stored in any common warehouse or space that is completely protected from the weather, can be heated, and allows good aeration to avoid condensation.

However, since only a few major chains are in a position to buy full truck-loads, distribution warehouse facilities are required in the major consuming centres such as Montreal, Ottawa and Toronto. It is only by having stock available in these centres that the large majority of customers can be properly servced. Distribution warehouse changes and local delivery costs add quite substantially to

a. Canned Goods - continued

marketing costs. Normal warehouse charges average four cents ($0.04) per case per month with an additional three cents ($0.03) per case for handling. In-city delivery charges average $0.20 per cwt. In total, these charges amount to an average of $0.15 per case if stored for one month and $0.20 per case if stored an additional month.

Although warehousing facilities of this nature are available in the major centres it is obvious that Atlantic Processors are at a disadvantage over locally based processors who may be in a position to deliver directly from their plant location. Obviously, very close attention between warehouse stocks and sales volume is required to prevent these changes from becoming excessive.

b. Frozen Foods

Space for storage of frozen foods is limited in the Atlantic Region. Fruit and vegetable freezers must have adequate zero storage to hold not only a few weeks' production of each item but also sufficient space to ensure continuity of supply throughout the full year. Frozen potato products are processed for a period of 7-8 months. Even with this long production season, substantial warehouse space is required to carry product through its peak sales months which occur when production operations are normally halted.

b. Frozen Foods - continued

All of the larger frozen food processors have zero degree holding capacity, but all are not of sufficient size to handle the seasonal peaks which occur.

A factor contributing to acute storage conditions is the use of charter vessels by some frozen potato packers. This necessitates building up an inventory of 750 to 1000 tons in order to justify chartering. At present, the only method is to use cold storage space in a number of areas at considerable expense.

There are instances of storages being operated at greatly reduced capacity while a shortage of storage space exists in other areas. The blueberry operations in Nova Scotia are primarily one-product plants operating for 3-4 weeks each season. In years of good crops, the cold storage space in conjunction with these plants is full to capacity at the conclusion of the pack. From then on this inventory is gradually depleted and by late winter or early spring, the warehouse could conceivably be nearly empty. This is the season of the year when frozen potato packers are building up inventories for the summer sales and these processors are then usually short of space. Unfortunately, it is not economic for the vegetable freezers to use this storage capacity due to its location. It would appear that a

b. Frozen Foods - continued

comprehensive study of all food products requiring zero storage could well indicate a need for additional storage and a means to supply it economically.

Whether this storage space requirement should be provided by public warehousing by the various processors requires consideration. We do not believe that a warehouse built with government subsidies is warranted nor can it be justified under the circumstances. We believe that any additional storage required in the Atlantic area should be considered from the standpoint of a public warehouse facility. Such a facility should service all processing industries -- fruit and vegetable, fish, poultry, meats, butter, cheese and seafood processors. It would appear that the need for such a facility is greater in PEI than in the other areas.

The frozen food processors in the Atlantic area also have a need for cold storage warehousing space to service more adequately the major distribution centres of Central Canada. Very few major chains are in a position to buy in truckload quantities. The great majority of customers and particularly institutional accounts, who have fluctuating needs, require local stocks. Generally speaking, it can be stated that direct delivery from plant to customer is a difficult undertaking for the frozen food processors in the Atlantic area.

b. Frozen Foods - continued

The problem is now handled by storage of stocks in public cold storage warehouses in each major distribution centre. Insurance of adequate supplies of a wide range of products under many labels results in heavy inventories in these centres and thus substantial storage, handling and delivery charges. On an annual basis, in-city warehouse charges add substantially to the cost of marketing and resulting profitability to the processor.

It is conceivable that it would be advantageous for most Atlantic processors serving the Central Canada market to ship their product in bulk pallet bins to a centralized warehouse located to service the major centres of Montreal, Ottawa and Toronto. Such a distribution centre would handle all repackaging operations and distribution to the individual customers.

A modern storage, distribution and packaging warehouse would offer the following advantages:

1. Shipments of the major items from the Atlantic area would be handled in bulk palletized containers and in the largest rail cars available thus securing the lowest possible transportation rate.

b. Frozen Foods - continued

2. Less product of each item would be maintained in the distribution warehouse since the requirements for each size and label of an individual product would in most instances come from the same bulk material. This would result in much greater flexibility and less out-of-stock positions.

3. Storage charges would be less on a per pound basis since the product would be stored in bulk until required for packaging and delivery.

4. Increased storage volume would be available at the processing location since greatly reduced stocks of fully labelled goods would be held on hand.

5. This distribution warehouse could also be used to provide storage needs over and above that available at the plant location.

6. Many types of packaging materials which now have to be transported from Central Canada to the Atlantic area would in large measure be diverted to this distribution warehouse thus eliminating transport charges on this forward and backward movement of material.

b. Frozen Foods - continued

Aside from these advantages, the main overriding factor would be in greatly improved service to the individual customer. Shipments of less-than-truckload (LTL) lots would be greatly reduced since orders could be combined with other products being shipped from the same warehouse. Although the total savings from a financial standpoint may not be substantial, we believe that the improved type of service offered would help to widen the market opportunities for each processor and thus increase profitability.

Such a facility should be of real interest to a competent public warehousing firm, providing a guarantee of a minimum annual volume were arranged on behalf of the Atlantic processors. With a fixed committment of this nature a warehouse operator could secure other accounts covering the full range of products normally stored in such a warehouse and thus develop a viable operation with significant benefits to Atlantic processors.

3. Grading

All processed fruit and vegetables produced in Canada and sold in inter-provincial or export markets must originate from plants registered for Federal inspection and grading. Few, if any, food processors operate outside Federal regulations since all products would have to be sold within the province in which the plant is located.

3. Grading - continued

Although processors normally grade their own products at time of pack and all such products must pass Federal inspection prior to shipment. Further inspection is made by selection of representative samples from wholesalers as well as from retail stores. Grading regulations are continually being up-dated with the result that Canadian regulations are considered to be well in line with most other advanced nations.

4. Packaging

In any economy where mass production and distribution becomes important, packaging also becomes important. In 1965, packing costs accounted for 20 percent of the variable cost of processing fruits and vegetables in the Atlantic Region, and an even greater 31 percent for the whole of Canada.

Three basic services performed by packaging are pre-unitization, protection and communication. Pre-unitization is the process of pre-packaging given quantities so that measuring at the point of sale is reduced. All processed fruits and vegetables must follow fairly rigid standards with respect to size and weight. The processor does have to decide, however, how much of his pack he will distribute in each size container. The trend today is towards smaller, more convenient to use containers.

4. Packaging - continued

Protection is the function of getting the goods to the user undamaged, which includes both transport and storage protection. Processors have the expert assistance of numerous container manufacturers in assuring that their products will be adequately protected. Communication is the task of informing the user what is in the package, and attracting his attention to it when the product is mass-marketed. Many food processors have come to regard the package as a salesman of the product.

As to the question "What constitutes a good consumer package ?", the following answer has been forwarded[1]:-

A good consumer package is one which:

1. Adequately protects the quality of the product during necessary shelf-life in a given climatic region.
2. Can be handled efficiently in production and distribution.
3. Has high merchandising and consumer convenience values.
4. Keeps packaging costs at a minimum, consistent with other essential requirements.

Certainly all packaging materials in wide use today offer adequate quality protection and can be handled efficiently in production and distribution.

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[1] Food Engineering, March 1966, pp. 89.

However, not all package types and sizes offer high merchandising and consumer convenience values. Those that do usually do so at a high cost to the processor and consumer. It is difficult, indeed, to find that container size and type which will equate the marginal cost of packaging and marginal return due to packaging.

Nevertheless, every processor must decide for each product what package type and size will give optimum results - and results and usually measured in terms of profits.

The percentage difference in industry packaging costs between the Atlantic Region and the whole of Canada may stem from any one or a combination of the following:-

1. A greater percentage of the output of processed fruits and vegetables in the Atlantic Region are sold institutionally than in the rest of Canada.
2. Processors in the other provinces do spend more on packaging than their counterparts in Atlantic Canada.
3. Labour and/or raw material costs are less in other provinces, thus packaging costs show up as a larger part of total costs.

4. Packaging - continued

Although point one may hold some truth, the main cause of this difference would seem to be as stated in point two, and this important point is aptly demonstrated with reference to the apple processing industry as covered in detail in Volume II.

Unless Regional processors devote more energies to serving consumer needs in relation to packaging and to communication of their product via the package itself, they stand little chance of making substantial inroads into or even maintaining markets outside the region. Lack of attention to packaging needs may also result in an eventual weakening of their position in the regional market.

5. Financing

The problem of financing fruit and vegetable processing companies can be divided into two phases; long-term financing and seasonal. Short-term financing is used to cover costs of seasonal requirements such as raw material, labour, packaging materials, warehousing and other supplies. The need for short-term funds is great and normally many sources are utilized. The grower may be paid on a deferred basis over many months. Suppliers of cans and packaging materials normally grant credit terms. However, most companies must turn to the banks for a substantial amount of such funds.

5. Financing - continued

This type of financing is normally granted against warehouse inventories, but only to the extent of 50-60% of market price. Unless a company has a substantial profit ratio on sales such borrowings at today's interest rates places a heavy burden on the operation.

MARKET ENTRY IN RELATION TO THE FRUIT AND VEGETABLE PROCESSING INDUSTRY

There are a number of structural dimensions which play an important role in conditioning the conduct and performance of an industry, some of which determine the ease or difficulty of market entry to new firms or new products. Some of the variables which play an important part in structuring entry conditions are the level of overall and market concentration, and the condition of entry.

A brief review of the meaning of these variables and the role they may play in the Atlantic Region market and their affect on the fruit and vegetable processing industry follows:

1. Overall & Market Concentration

Overall concentration measures the extent to which aggregative production capacity and financial resources of an industry are controlled by a relatively few large corporations. Although there is no necessary relationship between the level of overall concentration and the ability to influence price, or restrict entrance by such devices as price cutting, a recent study conducted in the U.S. indicates that such a relationship may exist; in other words, overall concentration is linked in some way to market concentration.[1]

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[1] The Structure of Food Manufacturing, Technical Study No. 8, National Commission on Food Marketing, June 1966, U.S. D.A.

1. Overall & Market Concentration - continued

Market concentration measures differ from overall concentration measures in that they describe a structural dimension of markets in which competitors vie with one another in making sales.

In a highly concentrated product market, the interdependence of leading firms is so strong that strong communities of interest develop to identify and avoid those strategies most likely to lead to competitive reactions which are destructive to profits. Firms in highly concentrated product markets are sensitive to competition from new products and new firms.

Unlike competitors in unconcentrated markets who are so small they are not concerned with possible competitor reactions when choosing marketing strategies, or with the entrance of new firms, firms in concentrated markets are likely to react by special discounts or "cents-off" promotions, increased advertising or some more drastic form of anti-competitive action intended to make entrance more difficult.

The evaluation of the degree of concentration within an industry must take into account the scope of the market in which firms operate. A firm in the Maritimes may have 4 or 5 percent of the national market share for a particular product or product group but a much higher share in the regional market. As an example, using data from the Canadian

1. Overall & Market Concentration - continued

Consumer Survey to indicate approximate market share, Graves had only 1% of the Canadian market for canned baked beans yet captured 20 percent of the Maritime market for this product. Such a firm would have little market power on a national basis, yet may have considerable power in local markets.

It is imperative then that regional product market shares be examined when concentration in a regional market is being assessed. Table 31 shows the concentration on a product basis for the Atlantic Region market for various processed fruit and vegetable items. The concentration ratios used are based on brand preference data shown in Appendix O. Brand preference percentages are assumed to be a fair indication of market share. For principal fruit and vegetable products, the two largest firms accounted for market shares ranging from 50 percent to 85 percent in 1965. The highest market concentration was identified with vinegar and the lowest with canned baked beans.

It was mentioned that there existed a connection between overall concentration and market concentration. The link between the two concentration measures is revealed by an analysis of the number of leading positions in individual product markets which are occupied by the largest fruit and vegetable processing firms. This level of leadership variable

TABLE 31

CONCENTRATION IN SALES OF SELECTED PRODUCTS - ATLANTIC REGION MARKET, 1965

PRODUCT	2 largest brands	2-4 largest brands	4-8 largest brands
	PERCENT OF SALES		
Vinegar	85	92	100
Pickles	52	72	89
Jellies	66	83	92
Jams	46	65	80
Fresh frozen vegetables	55	77	90
Fresh frozen fruits	67	84	92
Canned Spaghetti	65	90	100
Canned pears	80	88	98
Canned baked beans	50	87	96
Canned peaches	59	70	79
Canned fruit cocktail	79	90	95
Canned peas	61	77	85
Canned beans, green & waxed	68	81	93
Potato chips	59	87	95

1. Overall & Market Concentration - continued

also relates information relevant to the condition of entry and the type of conduct to be expected in product markets. Where entry into a market is contingent on successfully carrying out a market share from leading firms, it will be made potentially more difficult if the power base of the leading firms - as measured by overall size of assets and sales, and product market concentration is greater. Table 32 indicates the appearance of a major firm, usually a national firm, in the top market positions for various standard product groups.

Generally, those product markets characterised by high concentration at the 2 and 4 firm levels and dominated by large national firms would be the most difficult for new firm or product entry.

2. Condition of Entry

The condition of entry refers to the cost to selling price advantage held by established firms in an industry relative to new competitors entering from the outside. The condition of entry reflects the magnitude of the obstacles which new entrants must overcome before they can enter and become successfully established in the industry. These obstacles are referred to as barriers to entry. The three types of barriers which are of primary importance in determining the condition of entry are: a product differentiation advantage enjoyed by established sellers, and absolute cost

TABLE 32 APPEARANCE OF MAJOR "NATIONAL" FIRMS IN TOP 4 MARKET POSITIONS FOR STANDARD PRODUCTS - ATLANTIC REGION, 1965

PRODUCT	MARKET POSITION			
	1st	2nd	3rd	4th
Vinegar	x	x	x	
Pickles	x		x	x
Jellies	x	x	x	x
Jams	x		x	
Fresh frozen vegetables			x	x
Fresh frozen fruits			x	
Canned spaghetti	x	x	x	x
Canned pears	x		x	x
Canned baked beans	x		x	x
Canned peaches	x	x	x	
Canned peas		x		x
Canned beans, green & waxed		x	x	x

2. Condition of Entry - continued

advantage available only to established sellers and the existence of economics of scale in either production or distribution. The degree of product differentiation refers to the extent consumers consider the offerings of competing sellers as imperfect substitutes. Product differentiation forces new entrants to sell at prices below those of the more preferred brands of established sellers or to invest heavily in advertising and other types of promotional activity in order to achieve a preferred status for their own brand and a sales volume capable of generating low unit processing and distributing costs.

The significance of product differentiation as a barrier is greatly increased if accompanied by important scale advantages in either production or distribution. Faced with both a heavy product differentiation disadvantage and the necessity for having to operate at a relatively large scale, the new entrant would find it particularly difficult to achieve an initial share of the market commensurate with profitable operation. Companies with already heavily advertised or well-known brands would find penetration into new product markets relatively more easy due to the carry over from their other well established product lines.

New entrants may face absolute cost disadvantages if efficient advertising requires a budget the size of which only large multi-product

2. Condition of Entry - continued

companies can afford. An absolute cost disadvantage may also be due to accumulated effects of advertising. This disadvantage would continue until such time as the expenditures of new entrants began to realize their full sales producing potential.

The product differentiation investment of new firms adds to the capital requirements of entry and attaches a great deal of risk to it.

Economies of scale affect entry conditions in that they determine the efficient size of firms relative to industry output. Entry is more difficult, for example, when the scale of efficient plant operation requires the firm to build a plant of a size which constitutes a large percent of industry output. If the new entrant builds a plant smaller than minimum efficient scale, it has a significant cost disadvantage. Economies of scale are important not only to prospective entrants, but also to established firms who are under pressure to adjust to efficient scale in the long run.

The economies of scale entry barrier interact with other dimensions of structure. In product markets, where concentration is high and products are highly differentiated, the importance of the scale barrier increases significantly.[2]

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[2] Coffee, breakfast cereals and cookies are examples of such product lines.

2. Condition of Entry - continued

In a market where a minimum efficient scale plant, or product line in the case of an already established processor, accounts for 1 percent of sales or less, no entrant is apt to endanger seriously the market share of any of the established competitors or even be noticed by them since the pro-rata affect on each seller's share will be only 1/5 of a percent if there are 5 firms present in the market. Conditions are very different in a market where a minimum efficient scale size accounts for 10 percent of sales. An effective entrant may endanger the market share of established sellers, and his entry be very apparent indeed. For the pro-rata affect is 2 percent on each rival's market share. Unless established firms can operate profitably with their output thus curtailed, they may react in such a way as to prevent the entrant from gaining a market share necessary for profitable operation.

Aside from encouraging highly competitive reactions from already established firms a new entrant into a highly concentrated product market may reduce the profit margins of all firms within the industry. This would happen if costly price promotions took place over an extended period of time, or if the reduced market share of firms previously in the market required them to operate at a less efficient output level than previously.

2. Condition of Entry - continued

Such a situation would affect the smaller, regional processors to a greater extent than the national brand manufacturers. Regional processors rely more heavily upon the regional market as an outlet for their products than the major national distributors who may distribute only 2 or 3 percent of the output of any particular brand on the regional market.

A decrease of 1 percent of their share on the regional market would account for an insignificant decrease in their overall sales. For a regional processor, distributing all or a substantial percentage of his production locally, a 1 or 2 percent decrease in market share is quite significant. It is possible that a new entrant into a market would reduce the regional market share of the smaller regional brands more than that of the national brands or the more widely recognized regional brands. Built-in product differentiation due to advertising would tend to protect the market share of the national or more popular brands from new competition. It would be the small processor with the less well established brand who would suffer from added competition.

3. Entry Barriers Faced by Atlantic Processors

The extent of the barriers to entry in any one market are a function of the firm involved and the product. It is beyond the scope of

3. Entry Barriers Faced by Atlantic Processors - continued

this study to indicate the magnitude of the barriers to entry to all markets served by Atlantic Region processors. However, because the market in Central Canada has been singled out as an area to which substantial new sales could be made by Atlantic processors, an attempt is made to indicate the level of four major market entry barriers for a number of SIC-112 items. The extent of the barriers are determined from data presented in Appendix O and a knowledge of the industry in Central Canada and this information is presented in Appendix U.

MARKET INFORMATION

It is the aim of every firm in the fruit and vegetable processing industry to maintain a balance between the supply of its various products and the market demand for them, and to obtain in the long run the maximum possible return on invested capital.

In order that the processor maximize his long run profits, he must rely on various sources of information about the markets in which his products are sold.

The extent to which the processor avails himself of the existing sources of marketing information, his ability to interpret this information into useful operating yardsticks, and the number and reliability of the sources of information, determine how effectively supply will meet demand, and how effectively the processors' share of the market will be maintained or increased.

The type of market information required by fruit and vegetable processors can be discussed according to time span requirements:

1. Long Term Market Information

The processor requires information on the long term changes in demand which can be expected to take place in the market. Examples of

1. Long Term Market Information - continued

the type of long term information requirements of processors might include:

- long run trends in consumption of fruit and vegetable items and food products having a fruit or vegetable base;
- trends in the growth of various segments of the processing industry, such as canning, freezing, dehydrating;
- changes in competition and organization within the industry and various long term projections of growth and prospects of a general nature.

This type of industry information is required for changes which cannot be accomplished in a short run. For example, a processor after World War II, sensing the phenomenal growth which was to take place in the frozen fruit and vegetable sector of the industry, could not change his present operations overnight and would adjust his operations over a period of years to meet the new demand.

The most valuable source of long range market information is trade journals. Occasionally, studies are carried out by the government or industry trade associations, outlining long range developments within an industry.

2. Medium Term Market Information

Medium term market information is required for changes which will take from one to three years to accomplish.

2. Medium Term Market Information - continued

If a processor, on the basis of certain market information, senses a demand for a new product or a new form of old product, it usually takes a substantial amount of time to set up or modify a production line and develop the necessary technology to produce the product.

Product, production, packaging, and retailing advances and trends are covered comprehensively in most trade journals. Government and association surveys are available which indicate consumer acceptance of new products.

3. Short Range Market Information

Short term market information is used as a basis for adjustments which can be carried out in a year or less.

Short range forecasts of the market for specific items, coupled with information on stocks and imports, form the basis for an estimate of the most profitable planting acreage and pack size for each item.

The primary source of current market and crop information is government statistical summaries compiled from regular monthly and yearly surveys. Very often this information is analysed and brought together in an easily usable form by the research staff of trade magazines and published therein. Forecasts and analyses presented in these trade

3. Short Range Market Information - continued

magazines are often more reliable than an individual analysis.

Trade magazines occasionally carry out their own survey to gather the type of management and marketing information which the government does not provide.

An often overlooked source of current information is the processor's own sales force or selling agent. These individuals are close to the market and they should be able to provide the processor with first hand market information.

4. Sources of Market Information

There are several reliable sources of market information available to processors in the Atlantic Region.

a) Trade Publications

Trade magazines, journals and newspapers provide information on the food industry and usually deal with such areas of interest as plants, products and packaging, processing, technology and technological breakthroughs, markets and market statistics, etc.

Some Canadian and U.S. publications of interest to fruit and vegetable processors are:

Canadian Publications

Canadian Food Industries

a) Trade Publications - continued

Food in Canada
Canadian Grocer
The Grower

U.S. Publications

Canning Trade
Food Engineering
Food Processing
Frozen Food Age & Quick Frozen Foods
The Packer

In respect to presentation of marketing information and analysis of marketing data, U.S. publications are far superior to those in Canada. This is due, in part, to the more detailed data compiled by government offices, upon which the analyses are based. This type of information is invaluable when assessing new product possibilities, and potential markets.

b) Government Publications and Services

The primary sources of information on packs, stocks, and shipments of canned and frozen fruit and vegetables are:

DBS. 32-211	Canned Foods Summary (Annual)
DBS, 32-212	Canned and Frozen Processed Foods (Annual)
DBS. 32-217	Stocks of Food Commodities in Cold Storage and Other Warehouses (Annual)
DBS. 32-218	Fruit and Vegetable Canners and Preservers.
DBS. 32-226	Apparent per Capita Domestic Disappearance of Food in Canada (Annual)
DBS. 32-011	Stocks of Canned Foods (Monthly)

b) Government Publications and Service - continued

DBS. 65-004 Exports by Commodities (Monthly)

DBS. 65-007 Imports by Commodities (Monthly)

DBS. 22-003 Fruit and Vegetable Crop Report (Seasonal)

The Canneries and Bakeries section of the Food and Beverage Processing Industry Division of the Department of Industry distributes current market information through a service bulletin. The releases contain information on stocks and packs, by province, container size, etc.

The Markets Information Section of the Production and Marketing Branch of the C. D. A. publishes annual Crop and Seasonal Price Summaries for fresh and processed fruits and vegetables. This section also publishes a weekly Fruit, Vegetable and Honey Crop and Market Report, which gives details of production, processing and marketing by province.

The Department of Trade and Industry is a valuable source of information on foreign markets for Canadian processed food products. Information on foreign markets is published periodically in Foreign Trade, a magazine published by the department, and assistance is available from various branches and divisions.

5. Comments on the Existing Information System

Processors in the Atlantic Region of Canada have access to all the sources of marketing information which have been mentioned. The extent to which the individual firms avail themselves of this information is determined by the firm itself. The Federal and Provincial Government services have fulfilled their obligation to supply pertinent market information, and cannot be expected to force the processor to make good use of this information. What these government bodies can do, however, is to present the information which they have collected in a way that will facilitate its use. The government might use its available manpower resources to interpret the basic data which it disseminates. An example of such a service is that provided by the Agricultural Marketing Service of the U.S.D.A. which compiles an Acreage-Marketing Guide. This guide is an attempt to aid the growers and processors in obtaining a balance between the supply of their product and the demand for it. Certain production influences, such as extremes of the weather, refuse control, but producers have full control over plantings.[1] Thus, they can contribute importantly to balanced market conditions by planting acreages which are likely to result in sufficient supplies to satisfy consumer needs but insufficient to result in depressed prices. On the basis of continuous studies of markets for various vegetable products, commodity specialists

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[1] Such a guide is applicable only to vegetable production since crops are planted annually. Short term changes in fruit production are not possible due to their perennial nature.

5. Comments on the Existing Information System - continued

develop recommendations of acreage levels which are likely to result in supplies which equal market needs. These recommendations are published and distributed to growers and processors prior to the planting of next year's crops.

Many Canadian and Maritime processors are not of sufficient size to support research staffs or marketing specialists to carry out a detailed analysis of available statistical information. A government publication similar to that of the Acreage-Marketing Guide in the U.S. would be of invaluable assistance to the small and medium sized processor, especially if crop planting recommendations were made on a regional basis.

Generally, decisions on acreage and pack size are based on an analysis of the previous year's sales, industry stocks, population growths, imports and exports and the processor's own feelings on what the size of the market will be for his products. Aside from external influences on sales of individual items, the processor must impute the effect of the company's promotion of the product through advertising, cents-off offerings, sales effort, etc. A new account or the expectation of a new account influences the final pack quantity decision. Many small packers simply pack as much as possible during the pro-

5. Comments on the Existing Information System - continued

duction season and then hope that they will be able to dispose of their stocks at a reasonable price. If prices are low due to over-production by the industry, these small packers may be forced to liquidate at a very low price by the banks or their creditors, which tends to further depress the market.

VERTICAL AND HORIZONTAL INTEGRATION IN FOOD MANUFACTURING AND MARKETING

1. Introduction

Vertical integration is the linking of successive stages of production or marketing. Horizontal integration is the branching out of a firm at one stage in the system.

Integration may take one or both of two forms - through ownership or contract. Contractural integration could be represented by, say, full supply contracts between a food processor and a retailer, or some other arrangement that tends to tie buyer and seller together in some manner; for example, private label supply contracts.

2. Extent of Integration

Backward vertical integration by processors into agricultural production is common place in fruit and vegetable production and practically all processors are engaged, either through contractural arrangements or actual ownership, in this type of raw material procurement.

In the section on the chain and affiliated food stores, it was shown how the chain system and the affiliated groups have grown in a horizontal arrangement. Significant developments in horizontal

2. Extent of Integration - continued

integration are still occurring, as exemplified by the recent amalgamation of 3 small food chains in Quebec.[1] Economics of scale in warehousing, purchasing, advertising and management are secured in this manner. Concentration of purchasing power at this level places the food processor in yet a more subservient position when bargaining with these retail giants.

A & P and Woolworth were the pioneers in the corporate chain store field in the U.S., but it was Loblaws that set the pace in Canada, and their position was consolidated, and substantially enlarged, when the George Weston Company secured control of the retailer giant about five years ago. The horizontal linkage of Loblaws with other food stores in Canada since that time, has been expanded from two hundred to six hundred retail outlets through corporate relationships of the Weston making and, concurrently, vertical relationships were also secured at the manufactural and wholesaling level of the food industry in Canada. Control of National Grocers and Atlantic Wholesalers was secured. Neilson, Willards and companies like Marvin's Biscuits and Connor Brothers in Atlantic Canada, were brought under Weston control and the movement continues not only in Canada, but in the U.S. and the United Kingdom as well. During the Senate and Commons investigations of 1966 1967, considerable information regarding Westons and Loblaws was dis-

[1] Couvrette and Provost Ltée, Denault Ltée and Lamontagne Ltée.

1. Extent of Integration - continued

closed for the first time. The whole picture with all its regional, national and international economic ramifications and implications remains, however, relatively obscure.

In Atlantic Canada, Weston's secured effective control of Sobey's fifty retail outlets in 1967 and so, the rationalization of the Loblaw/Atlantic Wholesale/Sobey combination is even now underway in New Brunswick, Nova Scotia and Prince Edward Island. This horizontal and vertical activity may provide an opportunity for food processors there, because the new organization provides access to Loblaw buying in addition to Sobey's limited regional purchasing in the past. Dominion Stores Ltd. expanded in a similar horizontal manner, i.e. through the purchase of independent stores and small food chains. They made no attempt, however, to make vertical associations because it was Argus Corporation that did this for them, through large investments in companies like General Bakeries, Canadian Food Products, etc. While Loblaw and Dominion looked like competitor corporate equals at the retail level of the food industry in Canada, Loblaws is really far ahead through its control of other food chains and supplier firms of both food and non-food items.

It is through private label buying that the chains have backward linkage with food processors in Atlantic Canada and it is possible that

2. Extent of Integration - continued

new sales volume will emerge from this linkage in the future.

Some food processors in Canada have made horizontal arrangements at the manufacturing level, in Atlantic Canada, for example, Stokely Van Camp; but there is little evidence to warrant enthusiasm as to any large scale investment or expansion in Atlantic Canada by other manufacturers.

3. Motives for Retailer Integration

Food retailers integrate into food manufacturing because doing so increases the extent or stability of their profits. Vertical integration may increase profits in a variety of ways.

1) Integration of adjoining production and marketing functions may eliminate the uncertainties resulting from imperfect market knowledge.
2) Vertical integration avoids processors selling costs and maybe the only means of obtaining private label merchandise at prices reflecting this.
3) Distribution from retailer's own plants to stores may avoid high-cost distribution methods used by processors.

Food chains are the leading potential intrants into many food processing and manufacturing industries because they can more readily hurdle

3. Motives for Retailer Integration - continued

the product differentiation barrier to entry. Product differentiation usually results from extensive persuasive advertising directed at building consumer preferences. Large food chains can overcome, at least partially, the barriers created by brand advertising by selling under their own brands.

There are certain conditions which must prevail before a retailer would consider vertical integration into manufacturing.

1) The retailers total sales of the product must be great enough to dispose of the output of a single plant.

2) Loyalty for manufacturers' brands must be low enough to allow a significant share of any product market to be captured by the store brand.

3) The retailer should be able to realize savings in distribution and other selling costs.

4) The return on investment to the present owner must be fair, or the retail buyer of the plant must be convinced that under his ownership the cost of production will be comparable to other plants.

4. Possibility of Retailer Integration Into Manufacturing in the Atlantic Provinces

Although a detailed investigation of the possibilities of retailer integration into the processing of fruits and vegetables in Atlantic Canada

4. Possibility of Retailer Integration Into Manufacturing in the Atlantic Provinces - continued

has not been carried out, from an examination of the motives and conditions for integration, it would not seem likely that any large retailers would be interested in such a proposition at the present time. Few, if any, retailers, would be able to handle all of the output from even one of the smaller canners or freezers, and it is doubtful if any of the plants could be at all competitive if their volume was reduced. Profitability in the industry is generally at a very low level. Distribution economies would certainly not be realized on frozen and canned goods being shipped from the Atlantic Provinces to markets in Central and Western Canada.

PRIVATE LABEL GOODS

Private label goods are those products now widely sold through Canadian department stores, gas stations, wholesalers, and chain stores, that bear the vendor's own label or private brand names, in competition with nationally advertised lines of similar merchandise.

Almost every corporate or organized sales outlet in Canada that deals directly with the consumer, is selling private label goods of some kind - it is only a question of volume.

1) The major gas companies sell private label anti-freeze, batteries, tires, and other accessories.

2) The major chain drug stores sell private label cosmetics, cough syrups, and household "remedies".

3) The major department stores sell private label washers, dryers, radios, typewriters, shirts and furniture, and

4) the corporate chain food stores - along with the wholesalers who service "independent" grocers in Canada - are now doing 30% or more of their annual sales in private label goods, in the main categories set out below:

Canned Fruit
Canned Vegetables
Canned Juices
Pickles and Relishes
Salad Dressings
Jams, Jellies, Spreads
Cookies and Crackers
Coffee, Tea, Cocoa
Desserts and Toppings

Frozen Fruit and Vegetables
Pet Foods
Detergents
Bakery lines

This list is typical for all the chains in Canada - with the exception of LOBLAW'S, who do not stock private label canned goods in their stores.

While representatives of the chain food stores stress the fact that they only sell 200-300 items via private label, out of 5,000+ items on their shelves - it is obvious that the chains have gone into and will go into any item, via private label, that has volume and a good mark-up for the store.

The percentage of private label merchandise packed by canners and freezers in Canada is somewhat less than the 55 percent level prevailing in the United States, nevertheless, it commands a substantial part of sales volume. Generally, the small to medium sized canning plant produces a larger percentage of private label merchandise than the large, national firm. This is not true, however, in the freezing industry as fewer freezers have national distribution or elaborate promotional programmes. The multiplicity of frozen fruit and vegetable brands placed on the market by manufacturers and a lack of appreciable market concentration has trended to create brand confusion and has provided an opportunity for retail controlled "store" brands.

Canadian food processors and the chains have been in tension, and often in conflict, as private label sales have grown over the years - and the price-conscious Canadian consumer has followed their unending arguments with great interest.

What is the true quality of private label food items? Is it equal to, as good as, or below, the products sold with BORDEN'S, KRAFT, NABISCO OR AYLMER labels?

Why the price differential between private label canned goods and lines of fruit or vegetables bearing such prestigious brand names as HEINZ, LIBBY and DEL MONTE ?

These questions were asked during the Senate/Commons investigations on consumer credit, in 1966, and not always were complete or satisfactory answers secured - the controversy continues, and the subject is now a matter of concern for the Department of Consumer and Corporate Affairs.

Insofar as "quality" is concerned, the vendors of private label food products in Canada do not attempt to match the pace and price-setting lines of "fancy" canned goods, the best jams and jellies, or the finest pickles. They produce and sell lines of medium-priced private

label goods - and presumably quality and value are there, for the prices quoted.

As to price, the private label goods are lower, and this was brought out in considerable detail and clarity by spokesmen for the chains, during the Senate/Commons investigations referred to above. In some lines, the differential is 20-25-30% below the nationally advertised lines - and it is this price advantage that has secured rising volume for the chains over the years. In this connection, the chains say that private label goods earned their way on to the shelf via price and they remain there because of price and quality.

It is at this point that the economics of supply from Atlantic Canada to the Central Canada market, and even the regional market, for this kind of goods, must be appraised.

The chains are buying private label goods in great volume and, in so doing, they can offer long term commitments that would never be given for branded merchandise. The prices offered will be below those paid for "national brands" - concurrently, however, the supplier is not faced with providing various discounts for special "in store" promotions that are now characteristic of more conventional selling to the chains, nor does the processor have to supply a presold brand name with his product.

Private Label Goods - continued

Some of the food plants in Atlantic Canada are producing private label canned goods and frozen fruit or vegetables, for chains in Central Canada. These plants might get a greater volume of private label supply if appropriate steps are taken with the major chains in Canada and in the U.S., to determine the feasibility of diverting a larger segment of their buying to sources of supply in the Atlantic Provinces.

An in-depth discussion of the private label requirements of a major Canadian IGA wholesaler located in Central Canada is presented in Appendix S.

PRICE SPREADS

1. Farm-Retail Price Spreads

The difference between the price paid by consumers for a processed food item and the farm value of an equivalent quantity is the price spread accruing to the food industry for processing and distribution. Price spreads vary widely from product to product and change from year to year. Consumers and farmers have long been interested in the amounts of these price spreads and in the costs and profits that comprise them.

Price spreads are normally reflected as a percentage of the final consumer price or retail price and are referred to as a share of the consumer's dollar paid for a particular item. The share components traditionally used in measuring price spreads are: the farmer's share, the processor's share at the f.o.b. plant level, and the combined wholesaler/retailer share.

a. Problems of Measuring Farm-Retail Price Spreads

A number of difficulties are encountered in attempting to measure price spreads. Several relate to determining the average retail price at which a particular product was sold in a given week or month. Brand, quality, unit of sale, advertised "specials", type of store, and

a. Problems of Measuring Farm-Retail Price Spreads - continued

geographic location all cause variation in retail prices. Other problems relate to ascertaining the average farm price for the individual product and to obtaining accurate data on the shrinkage of physical quantity as the product moves from farmers to consumers.

b. Retail Prices

Average annual retail prices of selected food items are published by the Department of Trade and Industry and they form part of the base for calculating the consumer price index.[1]

Average retail prices are collected for the following items of interest to processors in Atlantic Canada: Strawberries, frozen, fancy, pkg., 15 oz.; apple juice, choice, 20 oz.; pears, canned, choice, 15 oz.; green peas, frozen, fancy, pkg., 12 oz.; green beans, Fr. cut, frozen, pkg., 10 oz.; and peas, canned, choice, 15 oz.

c. Farm-Retail Spread and Farmers Share for Selected Items

Table 33 sets out farm-retail spreads and farmers share of retail value for those items on which sufficient data is available.

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1 Prices and Price Indexes, No. 62-002, D.B.S., Ottawa.

TABLE 33 FARM-RETAIL PRICE SPREAD FOR SELECTED ITEMS, 1966

	Average Retail Price[1] ¢	Factor	Net Weight Fresh Equivalent oz.	Farm Value per lb. (¢)	Farm Value per retail unit[3] ¢	Farmers' Share of retail value
Strawberries, frozen, fancy, pkg., 15 oz.	52.2	.81	12.15	23.1	17.3	33.2
Apple juice, choice, 20 oz.	18.7	1.66	33.2	1.4	2.91	15.4
Pears, canned, choice, 15 oz.	25.1	1.22	16.8	4.8	4.57	18.2
Green peas, frozen, fancy, pkg., 12 oz.	24.5	1.05	12.6	5.35	4.2	17.2
Green beans, Fr. cut, frozen, pkg., 10 oz.	26.4	1.43	14.3	4.42	3.94	14.9
Peas, canned, choice 15 oz.	19.4	0.70	10.5	5.35	3.5	18.0

1 Average prices based on prices in 16 cities.

2 Pounds of fresh item at farm level equivalent to 1 lb. processed.

3 Value at the farm level of the fresh equivalent quantity present in the retail unit specified.

c. Farm-Retail Spread and Farmers Share for Selected Items - cont'd

It is beyond the scope of this report to present data on the costs and profits comprising the farm-retail price spreads. This information, because of its general nature, would be of little use to the processor in the Atlantic Region. For a comprehensive report on price spreads in Canada, the reader is referred to the Report of the Royal Commission on Price Spreads of Food Products, September, 1959.

From a marketing standpoint, general price spreads do not provide detailed information on price levels prevailing in individual markets for specific grades, size or name brand of product and are of little value except to provide aggregative data on the cost of producing and marketing a product.

Processors should be interested in retail prices of specific products in particular markets; however, this type of information is not publically available in Canada and would have to be procured on an individual basis through price surveys.

As a general summary, one might state that prices to growers have remained fairly constant over the past few years while processor costs have risen substantially for packaging materials, machinery, supplies and services. Processors, through automation and other cost-saving devices, have attempted to absorb a part of this increased

c. Farm-Retail Spread and Farmers Share for Selected Items - cont'd

cost; nevertheless, some of the additional cost has been passed along to the consumer. This, along with a preference by consumers for smaller retail sized units, has resulted in reduced margins for the grower, reflected as a percentage of the selling price.

Development study

Fruit and Vegetable Processing Industry

Atlantic Provinces

Volume 2
The products

VOLUME 2

THE PRODUCTS

This volume investigates various production and marketing aspects of agricultural crops and processed fruit and vegetable items, and attempts to uncover opportunities and explore methods for the expansion and development of products packed by the fruit and vegetable processing industry in the Atlantic Provinces. The crops and products reported upon, herein, are those of special significance to agricultural development and the processing industry in the Atlantic Provinces.

TABLE OF CONTENTS

PRODUCT REPORTS

INTRODUCTION

The Terms of Reference of this study indicated that specific attention be directed to certain fruit and vegetable items upon which the processing industry in the Atlantic Region has been established. The particular items on which information has been gathered are: potatoes, apples, peas, beans, berries, pears and cole crops. The products of most significance, and those which form the backbone of the freezing and canning segments of the industry, are potato and apple products, respectively.

The following product reports are presented in approximate order of their importance to the future development of the processing industry in the Region. The depth of study of each particular item reflects our assessment of the importance of each crop to the continued viability of the fruit and vegetable processing industry in the Atlantic Region.

As requested, a separate report on the production and marketing of turnips in the Atlantic Provinces has been prepared and is included with this report. A report on asparagus is presented, as this item has definite potential for development within the region.

APPLE PRODUCTS

1. Introduction

There are four major producers of processed apple products in the Atlantic Region - Scotian Gold Co-operative Ltd., M. W. Graves & Company Ltd., Annapolis Valley Canners Limited and Kent Foods Limited. These four firms produce a wide range of apple products which may be classified into three basic categories: sauce, juice and sliced fruit.

Their products are marketed in the Atlantic Region, Central Canada, the U.S., the U.K., and several other countries. The apple processing industry in the Atlantic Region is at present faced with the problem of being unable to supply, at a reasonable profit level, what was until now one of its major export markets. Devaluation of the pound sterling and increased competition from countries such as Italy, France, Japan and China has made it increasingly difficult to continue to supply the volume of product - mainly solid pack apple slices - previously shipped to the United Kingdom. As a result, the industry must find new markets for its product, or supply increasing amounts to markets which are already being supplied.

Generally, the processed apple industry in Canada has lagged behind the industry in the U.S. in the development of new products,

1. Introduction - continued

and the full exploitation of existing markets. Development of the Canadian market for apple products and the full exploitation of the vast market in the north-east United States made accessible by the Kennedy Round trade agreements is a partial remedy to the problems now plaguing the industry in Atlantic Canada.

2. Apple Production and Utilization in Canada

The production of apples in Canada since 1961 has ranged from a minimum of 16.5 million bushels in 1961 to a maximum of 24.5 million in 1967. Over the past few years, production has fluctuated slightly above and below 20 million bushels. Since 1962, the Atlantic Region has accounted for approximately 14% of Canadian apple production (Table 1). An average of one third of the total Canadian apple crops finds its way into processed apple products. Although figures do not indicate any definite trend, it would seem that in the future the proportion of apples going to processing will increase. Thirty percent of all apples used by the processing industry are used by the industry in the Atlantic Region, and approximately 70 percent of the entire apple crop in Nova Scotia is utilized by the processing industry in the province (Table 5).

In Canada, the major portion of the apple crop used for processing (65 percent) is used to produce apple juice. Table 6 gives

2. Apple Production and Utilization in Canada - continued

details of apple utilization in Canada and the United States.

3. Profile of the Canadian Market for Processed Apple Products

a. Canned Apples

Canned apple slices account for 17 percent of the total processed apple utilization, with the great bulk of this product put up for the institutional market in No. 10 tins (Table 6). There has been no discernible trend in the growth of the market for apple slices, which in 1967 absorbed 30 million pounds of solid pack apple slices (Table 3). Within the market there has been a shift out of the retail pack (No. 2 cans) into the institutional pack (No. 10 cans). Trends in the solid pack market are difficult to anticipate because of the many alternative products available to the trade on which only fragmentary information is available.[1] While the institutional pack of canned apple slices has experienced some growth, it is vulnerable to competition from frozen apple slices and fresh apple slice operations. Utilization of both of the latter products has increased at a rapid rate in the United States and although Canadian figures are not available for fresh slicing operations, production of frozen slices has increased

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1 The terminology used in the apple industry for canned apple slices is "solid pack".

1. Introduction - continued

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a. Canned Apples - continued

substantially since 1963 (Table 3). Fresh sliced operations are directed mainly to the bakery trade, and are centred in large cities. Such operations will present increased competition to apple processors.

The retail pack of canned apple slices has declined because of increasing sales of apple pie filling, frozen apple slices and frozen pies.

b. Apple Juice

The dramatic increase in the size of the juice and drink market has had an impact on the processing of apples into juice. At the present time, 65 percent of the apples used for processing in Canada are used to produce juice. Consumption of apple juice in Canada is around 7 lbs. per capita, as compared with 1.5 lbs. per capita in the United States.

Apple juice is marketed in a wide range of container sizes. The bulk of the product is put up in 48 oz. tins which are sold both retail and institutionally.

The substantial market for apple juice in Canada developed as a result of co-operative efforts of growers, processors and various marketing organizations under government sponsorship. A concerted effort was made to develop a market for a product which

b. Apple Juice - continued

would remove the lower grades of apples from the fresh market, threrby enhancing the reputation of Canadian fresh apples. The campaign was assisted through a major advertising and promotional programme carried out in conjunction with the Federal government. This concentrated effort dramatically increased consumption of apple juice at a time when the whole drink market was expanding.

c. Apple Sauce

Apple sauce utilizes 8 percent of all processed apples (Table 6) and ranks third in apple usage behind juice and canned apples. This is a somewhat different situation than exists in the United States where sauce products account for about a third of all processed apples and between a sixth and seventh of all apples sold.

Sauce is put up in a wide variety of tin and glass containers (Table 13). The bulk of the sauce produced is packed in retail size containers, 14 oz. and 19 oz. sizes, with the 14 oz. size predominating.

During the past three years, sauce has been packed in glass containers in Canada; however, statistics are not available to indicate how the market is shared between glass and tin. Dicussions

c. Apple Sauce - continued

held with retailers indicate acceptance of the glass package and that this type of container will eventually obtain the same prominence that it experiences in the United States.

Within the past year, two new sauce products have been placed on the market in Canada - McIntosh apple sauce and spiced apple sauce - and these products present definite competition to the traditional apple sauce blends.

The market for apple sauce in the United States is more developed than that in Canada. Recent trends in sauce consumption in the United States would suggest present per capita consumption of apple sauce to be 4.0 lbs. for the entire United States.[2]

Consumption of apple products in the north-east United States is 15 percent greater than for the whole United States population, as indicated by studies conducted by the United States Department of Agriculture in 1965.[3] This puts the level of consumption in the north-east United States at 4.6 pounds per capita, as compared with 1.0 pound in Canada.

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2 Food Consumption, Prices Expenditures, U.S.D.A., Economic Research Service.

3 Food Consumption of Households in U.S., Spring 1965. Food Consumption of Households in N.E. U.S., Spring 1965. U.S.D.A.

4. The Production and Marketing of Apple Products in Canada, With Special Reference to the Industry in the Atlantic Region

a. Apple Slices

The apple industry in Nova Scotia is the major producer of solid pack apples in Canada, with some 88 percent of production originating in that province (Table 7). Canadian production of solid pack apple slices in the No. 10, institutional size, tin has been well in excess of domestic consumption, resulting in approximately 30 percent of production being exported. In 1967, over 90 percent of these exports were directed to the United Kingdom, with small amounts going to the United States, the Caribbean area and parts of Europe (Table 17). Practically all of these exports originated from companies in the Annapolis Valley of Nova Scotia and two of the major producers there were shipping in excess of 50 percent of their solid pack production to the United Kingdom. With devaluation curtailing the profitability of the United Kingdom market, exports to that market in 1968 dropped to less than half of their 1967 level. Although exports to the United States, the Caribbean and other areas picked up considerably in 1968, it was not sufficient to prevent total exports dropping to half their 1967 level. As a result of this inability to move substantial quantities on the export market, a situation of oversupply resulted in the Canadian market. Price reductions by producers in an attempt to

a. Apple Slices - continued

move product out of inventory has depressed industry profits on this item.

The volume market for sliced apples in Canada is in Central Canada, especially the Montreal-Toronto metropolitan areas. This market is supplied mainly by Atlantic Region processors.

In the west, there are a number of packers putting up apple slices (Table 4); however, they are experiencing stiff competition from producers in Japan and China.

Because of transportation costs, western Canadian production and imports to the west coast, the market in British Columbia and much of the Prairies is not profitable for Atlantic Region processors.

There is a substantial market in Canada for apple pie filling. Production of this product is centred in Ontario, which put up 80 percent of the cases packed in 1967. The volume market for pie filling is in the major urban areas of Ontario and Quebec and this market is supplied by pre-sold brands such as Stafford and E. D. Smith. Practically all of the 40-50,000 cases packed in Nova Scotia are sold on the regional market or exported, and only one firm in Nova Scotia is packing pie filling. On a per capita basis, the market

a. Apple Slices - continued

in the Atlantic Region would be much smaller than that in Central Canada where the more affluent, more urbanized housewife demands more convenience of preparation in the products she buys.

b. Apple Sauce

Production of apple sauce for the Canadian market is centred in Ontario and Nova Scotia. Production in Ontario is slightly greater than in Nova Scotia. Ontario packs 50 percent, Nova Scotia 40 percent, and Quebec and British Columbia the remaining 10 percent. Of the Nova Scotia pack, 25 percent is marketed in the region, 65 percent in Central Canada (80 percent Quebec and 20 percent Ontario), about 10 percent is marketed in Western Canada.[1]

The market in the Atlantic Region is supplied almost entirely by local producers and at the present time sauce is packed in 14 oz. and 19 oz. tins for the retail market. Some 100 oz. tins are packed for the institutional market but volume there is small.

In Quebec, Nova Scotia and Ontario, processors share a major portion of the sauce market. Only two companies pack sauce in Quebec.

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1 Based on information obtained during discussions with processors.

b. Apple Sauce - continued

Scotian Gold is the only Atlantic Region processor with any substantial market in Quebec and Ontario at the retail level. Their main competitor there is the Allen's group. The market in the west is supplied primarily from British Columbia, with the main producer there being Sun-Rype Products Limited.

c. Apple Juice

The pack of apple juice by Nova Scotia processors comprises about 22 percent of the total Canadian pack (Table 7). In 1967, one million cases were packed in the Annapolis Valley and, of this total, 600,000 cases, or 60 percent, were marketed regionally. Of the remaining 40 percent of the pack, 30 percent was marketed in Central Canada, 10 percent in Western Canada and 5 percent was exported to the United Kingdom, the Caribbean, the United States and other European countries.[1]

Table 10 shows the pack of juice by province for 1966 and 1967. Although packs statistics are not given for Quebec and British Columbia, it can be assumed that they pack about one million cases each. The predominance of the McIntosh variety

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1 Based on information obtained during discussions with processors.

c. Apple Juice - continued

in Quebec and Ontario makes them ideal juice producing areas, and store shelves in Ontario and Quebec contain a number of well-known brand names associated with apple products.

The market for apple juice in Canada has been effectively developed and it has served to remove low grade fruit as a by-product of the fresh industry. However, the return to the grower and processor for this product is little more than the cost of production, sometimes even less. Apple juice meets severe competition from frozen concentrated citrus juice and from the many other fruit drinks available on the market today.

5. Product Development and Market Expansion in the Apple Industry

a. Introduction

The apple processing industry in Canada has for many years lagged behind the industry in the United States in product and market development of apple products. By product development is meant the whole physical area surrounding a product - package material, package design, product form and variations, and product promotion.

Traditionally, apple juice is sold in the standard 48 oz. tin, and apple sauce is produced from processing type apples to satisfy

a. Introduction - continued

the grade requirements of the Canada Department of Agriculture. Until recently, most of the sauce packed in Canada was put up in metal containers.

The apple industry in Canada is now in a state of flux. Increasing competition in world markets is forcing greater quantities of apples to be absorbed domestically or through newly developed export markets.

In order to compete both domestically and in highly competitive export markets, Nova Scotia processors must concentrate on several areas of product development.

New package developments and new product variations introduced by aggressive, market oriented, Ontario processors pose a threat to the market position of the Nova Scotia processor, especially in the Central Canadian market for apple sauce. Entry into the U. S. market will require aggressive promotion of existing lines.

The following sections outline these areas of investigation:

New apple products being offered consumers.

Trends in packaging and container size.

Comparative advantage of the Nova Scotia industry (or disadvantage) in new product development.

b. Juice

The juice market in Canada is already well developed and it is doubtful if any substantial gains in per capita consumption could be realized in the short term. Juice is packaged in a wide variety of container sizes, ranging from the 100 oz. institutional size to the 6 oz. individual portion control size. Practically all juice sold in Canada is packed in cans.

In the United States, a substantial portion of the juice market is supplied in large glass containers (32 oz. and gallon jug). A market may exist in Canada at the retail level for such a pack, especially in the metropolitan areas of Montreal and Toronto. An appealing product appearance and re-sealability may well provide adequate compensation for the added cost of packaging in glass containers.

The market for apple juice in 3-1/2 oz. to 6 oz. tins is growing in the United States. This package size appeals to small families, bachelors, single women, and elderly persons, who consume only small amounts of juice at any one sitting (Photo 3, Position 2). These cans are sold in "snack packs" of 6 or 4 cans, which are convenient for picnics and for lifting off the shelf - this merchandising technique has been used successfully in selling soft drinks. There is a substantial market for these individual portion control

b. Juice - continued

products among school children, workment and campers. Provision of a "pop-off" top, similar to that used on some frozen orange juice containers, would further add to the utility of the small container.

Producers in the Atlantic Region are not in a most favoured position to exploit the volume market for this convenience item; shipping and packaging cost differentials between Ontario, Quebec and Nova Scotian producers, place the former in a more favoured position to exploit the Central Canadian market.

One firm in the Annapolis Valley has been for some time supplying the market in Canada, the United States and several other countries with concentrated apple juice and apple essence.

Although the market for concentrated citrus and grape juices is very well developed in Canada and the United States, frozen apple concentrate has never made any significant inroads into the frozen juice market and this is especially true in Canada. Reasons for this range from an inferior taste as compared to canned juice, to a consumer preference for the traditional juice pack.

There is some concern over apple essence (syrup) a product used in the production of reconstituted apple juice. A change in the Agricultural Products Standards Act has allowed reconstituted juices

b. Juice - continued

to be marketed under the juice label, whereas in the past they were referred to as drinks. Reconstituted apple juice has been recently marketed in Central Canada and informed sources relate that the product was well accepted. If the industry in Atlantic Canada is able to produce apple essence to meet the price competition of imports, this product of transportation cost reducing technology may allow substantial penetration of the Central Canadian market for apple juice by Atlantic processors.

c. Slices

The institutional market for apple slices is a stable market and experiences a growth rate commensurate with that enjoyed by the entire institutional trade. The processing industry in the Atlantic Region has a major share of this market in Eastern and Central Canada, due to the lack of suitable apples for slices in other producing areas.

At the institutional level, the No. 10 tin of solid pack apples is being threatened by the growth and acceptance, by major users of apple slices, of frozen apple slices. One Nova Scotia processor is presently supplying the Central Canadian market with frozen apple slices from their Nova Scotia freezing plant. The market

c. Slices - continued

for the frozen slice must be developed and this requires missionary salesmen to instruct the trade in the proper use of the product.

Production of frozen apple slices is about 8 million pounds annually in Canada and has been increasing steadily. In the United States, approximately 8 percent of all apples processed are frozen compared with 3.4 percent in Canada. It is interesting to note that in the State of New York over 50 percent of all frozen sliced apples are produced by the dehydro-freezing process. Savings in freight are realized due to the reduction in water content of the product. The market for this product is again institutional and market development as in the case of the straight frozen apple slice requires missionary sales effort to direct the institutional buyer in the use of the product. Discussions did not disclose whether any quality differential existed between the dehydro-frozen and straight frozen apple slice. The dehydro-frozen process should be of interest to Atlantic processors as it reduces transportation costs - a factor often cited as hindering development of the industry there.

The prospects for further development of the apple pie filling and apple slice market at the retail level by Atlantic processors

c. Slices - continued

are not encouraging. The straight apple slice is being replaced by pie filling in most areas and the development of frozen fruit pies is cutting into the market for both these products.

Fortunately, a major freezer in the Atlantic Region has already entered the frozen pie (convenience food) field and indications are that this product will be successful.

The major market for pie filling is in Ontario and Quebec and, in those areas, Nova Scotian processors must compete against well-established and pre-sold brand names, such as E. D. Smith and Stafford, each of whom carries a full line of pie fillings. The market for pie fillings is supplied in the Atlantic Region by at least one Nova Scotian processor and brand names from Ontario and Quebec.

The local market for apple pie fillings seems to be well satisfied; however, an increase in sales might take place on the Central Canadian market. Scotian Gold have a well-known label in Quebec and Ontario, and it is possible that substantial quantities of apple pie filling could be marketed in Central Canada by them.

An apple slice product to which Nova Scotian processors should give considerable consideration is the "Spiced Apple Ring" (Photograph 3, Positions 1 and 5).

c. Slices - continued

The 14 oz. glass pack of spiced apple rings is found on every retail grocery shelf in the north-east United States. Some imported apple rings (Photograph 3, Position 5), "Thank You" brand, are now found on the market in Central Canada. There is a large institutional market for apple rings in the United States, and there is no reason to believe that such a market could not be developed in Canada by Nova Scotian processors. Nova Scotian processors are in a favourable position to supply the institutional market in the United States with such a product and additional sales potential may lie in supply of a private label product to that market.

Nova Scotian processors are in a favoured position to supply the Canadian market with this product because of the preponderance of processing variety apples in the region. Such a product would be a profitable outlet for apples intended for solid pack, where diminishing historical markets are curtailing sales volume.

A glass container would be required for the retail market where the 14 oz. container is dominant. The institutional pack would be put up in 100 oz. tins. The product would best be promoted as a meal embellishment or a dessert. The apple ring is similar in shape to pineapple rings and would be used in much the same manner. Institutionally, spiced apple rings would

c. Slices - continued

provide a colourful addition to buffet and banquet tables.

Similar to the spiced apple ring in use pattern is the "Crabapple in Syrup". Crabapples are packed whole and marketed primarily in a 14 oz. glass container. The crabapple in syrup has about the same product facing in stores in the United States as the spiced apple ring. The institutional market for this product is possibly larger than retail, as indicated by the fact that spiced crabapples have for many years been a common item on buffet and banquet tables.

Growing conditions in the Annapolis Valley would be ideal for crabapples and such a product possibility should be investigated more thoroughly by the industry in the Annapolis Valley.

d. Apple Sauce

i. Introduction

It has been pointed out that the market for apple sauce in Canada is substantially less developed than that in the United States. The reasons for this are not apparent and discussions with processors and trade people have not disclosed any single discernible cause for the situation.

1. Introduction - continued

No doubt the early entry into glass influenced per capita consumption in the United States. A situation paralleling that which occurred with Canadian apple juice has also aided development of the market for sauce in the United States. Through the co-operative efforts of growers, processors, wholesalers and retailers, a long-range advertising and promotional campaign has effectively increased consumption to the point where it is now second only to peaches in total sales volume for a canned fruit product. The presence of such giants as MOTTS and MUSSLEMAN in the apple industry, who invest millions of dollars in market development for their products, accounts for a part of the success of apple sauce.

If such an advertising and promotional campaign were to be mounted by the Canadian industry, at the grower and processor level, possibly in co-operation with Federal and Provincial Governments and agencies, apple sauce consumption could be increased to a much greater level.

As a fruit, apples and apple products in Canada do not experience competition from citrus fruits to the same extent as in the United States. It seems logical that, since Canada has such a well developed market for juice and fresh apples,

a substantial market for sauce could also be developed.

Development of the market for apple sauce in Canada to the level in the United States would mean an increase in production of 2.6 million cases of 24-15 oz. tins.[1] Production of apple sauce in Canada in 1967 was equivalent to 1 million cases of 24-15 oz. tins. Such an increase in production would realize the processor additional revenues of 10.4 million dollars at an average f.o.b. plant price of $4.0 per case.

At the present time, the apple processors in the Annapolis Valley of Nova Scotia should review their historical attitudes and marketing policy with regard to apple sauce. Their major competitor in Central Canada has been packing sauce in glass containers for some time now and more recently, has introduced two new product variations to his line - McIntosh apple sauce and Spiced (cinnamon) apple sauce. If the industry in Nova Scotia is to retain its position

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1 Per capita consumption of apple sauce in the United States is approximately 4.0 lbs.

i. Introduction - continued

on the Central Canadian market and expand its market in the region, serious consideration should be given to new packaging and new products.

An informal survey of the apple sauce market in the north-eastern United States has uncovered some interesting products and packages. A brief case history of the more unique products and a discussion of their potential for development by the Nova Scotian apple industry follows:

ii. Case Study One
"100% McIntosh Apple Sauce" and "Cinnamon Apple Sauce"

Sauce produced from the McIntosh variety of apple has made considerable inroads into the market for sauce produced from such traditional varieties as Gravensteins, Spies, Kings, Greening, etc.

One company in New York State, Seneca Foods Ltd., introduced a 100 percent McIntosh apple sauce to their marketing area several years ago and to date, this product has been extremely well received in the marketplace. Company sales personnel indicated that average yearly sales of the 100 percent McIntosh product are 300,000 cases. Coupled with their pack

of Cinnamon apple sauce, the production from this one plant is above that of the entire industry in Ontario. Their pack of McIntosh apple sauce is 70 percent of their total sauce pack, the Cinnamon pack accounts for the remaining 30 percent.

The belief that McIntosh apples produce an inferior sauce - a belief which is widely held by producers, trade people and quality control personnel in Canada and the United States - may be unfounded in fact.

Although sauce containing a high proportion of McIntosh apples may grade lower than a conventional sauce, it is well accepted by the housewife.

The results of a study on apple sauce preference conducted by Cornell University states:[2]

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2 Study of Apple Sauce Preference, 1960
Douglas J. Dalrymple,
Department of Agricultural Economics,
Cornell University Agricultural Experimental Station,
Cornell University, Ithaca, New York, October 1960.

ii. Case Study One - continued

"Contrary to widely held opinion, the sauces made with McIntosh apples were well received by the housewives. The sauce with 25 percent McIntosh was significantly preferred to the sauce with no McIntosh."

An earlier study showed that most consumers selected apple sauce on the basis of flavour and taste rather than the five factors used in the U.S. Grades for apple sauce.[3, 4]

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3 A Survey of Apple Sauce Preference,
Douglas J. Dalrymple,
Department of Agricultural Economics,
Cornell University Agricultural Experimental Station,
Cornell University, Ithaca, New York, September, 1959.

4 U.S. Standard Grades are based on five characteristics: Colour, flavour, consistency, texture and defects. Consistency is a measure of thickness; texture is a measure of size of apple sauce particles and defects are the bruise marks and pieces of skin and core that show up in apple sauce. A maximum of 20 points is given for each characteristic. Based on the number of points achieved, a grade of either A, C, or sub-standard is assigned.

ii. Case Study One - continued

It is quite conceivable that processors have been producing sauces which conformed to grade standards and not the wants of the consumer. Some basic investigations by the apple industry in Canada into consumer wants as they relate to apple sauce - and other apple products - might uncover some profitable opportunities for apple product producers.

The use of the name McIntosh is an excellent selling vehicle since the McIntosh variety is probably the most widely known of all north-eastern American apple varieties. This selling vehicle has been fully exploited by Seneca Foods who have placed the words:

"100%
McINTOSH
APPLESAUCE"

full width and breadth across their product facing (Photograph 1, Position 4).

The traditional "red apple" or "plate of sauce" is a noticeable absence on their label. The glass container permits easy identification of the product. The slightly redish off-colour disassociates the product from the baby food or salvy "vaseline" image sometimes subconsciously associated with the lighter, more pasty sauces. Although their product

PHOTOGRAPH NO. 1.

Samples of Apple Sauce Products from North-east United States

1. 2. 3. 4. 5.

PHOTOGRAPH NO. 2

Samples of Canadian Apple Sauce Products

1. 2. 3. 4. 5.

has broken all the rules of traditional apple sauce merchandising, it has been uniquely successful, and in the face of competition from nationally known industry leaders such as MOTTS.

Item Number 3, Photograph 1, is another Seneca product, "Cinnamon Apple Sauce". The cinnamon sauce accounts for 30 percent of Seneca sales of sauce and demonstrates the existence of markets for such product variations.

Previous to the introduction of the cinnamon sauce, studies indicated that 50 percent of apple sauce users added some type of seasoning to their sauce before using. Of this number, over 50 percent added "cinnamon".

Seneca Foods, sensing a need for such a product, created a utility for the consumer by adding the flavour to the product during processing. Such product innovations, although they do not expand the total market for apple products, do fulfill a need and create a utility for which the consumer is willing to pay. The returns to the innovator, if such innovations serve to switch consumers from competing brands, can be very rewarding.

ii. Case Study One - continued

The Allens organization in Ontario has recently introduced a McIntosh and a spiced (cinnamon) sauce to their expanding product line. These two product variations will enhance the position of the Allens brand on the retail shelf and will provide further competition to Nova Scotian sauce, especially in Central Canada.

Over 20 percent of the apple tree population in Nova Scotia is of the McIntosh variety and a sufficient number of McIntosh apples could be obtained for use in a McIntosh sauce. Very little development work or capital expenditure would be necessary to produce the sauce, although adequate cultural practices should be adopted by growers to take full advantage of such an outlet.

From a competitive standpoint, Nova Scotia is not the most favoured region for the production of a McIntosh sauce. Ontario and Quebec both have a greater percentage of their crop in McIntosh. Quebec with over 70 percent of their crop of the McIntosh variety, find themselves in a very favourable position for the production of a McIntosh sauce. At present, there are two processors packing sauce in Quebec. Nova Scotian processors should weigh carefully the possibility of a

ii. Case Study One - continued

large number of local brands appearing on the market in Quebec if a McIntosh sauce does indeed prove successful. If the industry in Nova Scotia did make an entry with a McIntosh sauce, they would be wise to differentiate it with a unique label and package.

Once initial consumer brand loyality was established for the differentiated products, it would be increasingly difficult for new brands to erode their already developed market. The barrel-shaped container used by Seneca is unique in the apple product industry and has to some extent contributed to the success of their two sauce products. Such a packaging innovation by a Nova Scotian processor would serve to differentiate their product from the other brands on the market and, in turn, would stabilize their position in the marketplace.

iii. Case Study Two
Johnny Appleseed's "McIntosh Apple Sauce"

This brand of sauce, which is found on the market in the New England area, is produced by a patented process which utilizes whole, unpeeled and uncored, apples. The sauce produced would probably grade standard in Canada. However,

this product has enjoyed a tremendous sales expansion since it was introduced onto the market. Because the apples do not require peeling or coring, smaller size apples may be utilized. This raw material savings, coupled with lower processing labour costs, allows the product to be sold at a level substantially below other name brand sauces on the market. Whether a substantial market for a low grade, low price sauce exists in Canada remains to be proven. Production of such a sauce in Canada would first require a revision of the Agricultural Products Standards Act which requires peeling and coring of the apples used in sauce production.

The management of New England Apple Products Ltd., developers of the process and sole United States producers, have indicated a willingness to license a producer in Canada.

This sauce, which has a very bland and pasty texture, has enjoyed particular success with the Jewish trade in New York City. The reasons for this are unknown. This same situation might be repeated in Canada. A low priced, standard grade, sauce might prove very popular as a dessert for children. The introduction of such a product in Canada should be preceded by basic market research as apple sauce preference has proved

PHOTOGRAPH NO. 3.

Miscellaneous Apple Products.

1. 2. 3. 4. 5. 6.

iii. Case Study Two - continued

to be a regional phenomenon in the United States.

iv. Case Study Three
"Chunky Apple Sauce" and "Apple Raspberry Sauce"

Chunky Apple Sauce (Photograph 1, Position 5) as its name indicates, has a granular texture. This consistency of sauce might hold some appeal for housewives who are accustomed to eating homemade apple sauce. A survey conducted in the United States in 1960 indicated that 35 percent of the housewives in New York State were still making some of their own apple sauce.[5]

Motts apple raspberry sauce (Photograph 1, Position 5) is an interesting product development. This eye-appealing sauce has potential as a meal embellishment or as a topping on toast, gingerbread or ice cream. This type of blended fruit sauce might find a substantial market among children if the price was not too out-of-line with regular sauce.

The introduction of both these sauces should be preceded by market testing and consumer research.

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5 Study of Apple Sauce Preference, 1960
Douglas J. Dalrymple,
Department of Agricultural Economics,
Cornell University, Ithaca, New York, 1960.

e. The U.S. Market for Apple Products

i. Introduction

There are several reasons why the apple processing industry in Nova Scotia should aggressively develop the market in the United States, especially the north-eastern United States, for their products. A few reasons why this market could be successfully developed are:

1. The Nova Scotia processors are close to the major markets of Boston and New York.
2. The tariff on apple products is low and in 1972 will be removed entirely.
3. Nova Scotia apple products are comparable to those produced in the United States.
4. The north-eastern United States is a substantial and already well developed market for all types of apple products.
5. Raw material and labour costs are generally lower than in the United States.
6. The exchange rate from Canadian to United States currency is a factor in favour of Canadian exporters.

A brief survey of the American market for Nova Scotia apple products has brought to light the following important aspects of that market for certain apple products:

ii. Canned Apple Slices

Canned apple slices account for 12.5 percent of the total United States market for products.[6] This is similar to the percentage of the total processed crop being packed of this product in Canada. This pack is essentially an institutional item with the No. 10 tin being used exclusively. Although sales are increasing, no dramatic increase is expected because of the trade preference for frozen and fresh slices.

The acknowledged leader in this field is Musselman, with Comstock also a strong factor in the market. In addition, there are many other smaller regional packers serving this market.

Although there are strong competitive factors existing in this market, it would appear to offer opportunities for the Annapolis Valley apple processors. Major distributors and wholesalers have indicated that they would be receptive to a Canadian produced product under certain conditions. It is

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6 All statistical data pertaining to the United States market for apple products has been obtained from a comprehensive report of the apple industry prepared for the American Can Company, entitled, "Profile and Prospects in Apple Products, 1967 - 1975, June 1967.

ii. Canned Apple Slices - continued

generally considered that the Nova Scotian area processors have not had good representation in the New England market. There has been a lack of aggressiveness and follow-up which has seriously hampered exploitation of this market, although sales have been made through certain wholesalers. The quality of the Nova Scotian product is considered average when compared to the top rated United States' brands. This is primarily due to workmanship, rather than basic quality of the apple product itself.

There is a strong "Buy American" factor existing in this market. This combined with a top quality product results in a situation where outside competition must sell on a price basis. Until such time as the Canadian processor can meet the top quality standards maintained by the U. S. packers, price secured for the Canadian solid pack will be $0. 40 to $0. 60 less per case. There is, however, a large market for this somewhat lower quality and in order to enter this market on a large scale, Canadian processors will have to sell on a price basis initially. Once quality has been improved and maintained at the level of the top rated U. S. packs, this price differential can be reduced. Present prices in the United States market

ii. Canned Apple Slices - continued

for solid pack apples are substantially higher than those prevailing in Canada.[7] Since the U. S. duty on this product is less than the exchange differential, we believe that a real opportunity exists, if properly exploited.

iii. Apple Sauce

Apple sauce accounts for one third of all processed apples. The growth rate of this item in the United States market has been phenomenal. This market is expanding at a rate of 500,000 cases per year on the basis of 24-2-1/2 equivalents. Recent growth and future growth has and will be in the glass pack and the No. 10 can for institutional use.

In the retail field, the acknowledged leader is Duffy Mott whose products are found on all retail store shelves along with either the chain's own private label or in some cases, that of regional producers. In the institutional field where

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7 Prices in the United States as reported on April 19, 1969 were 17½ cents per pound for solid pack apples. The price quoted by canners in the Annapolis Valley at this time was in the range of 14 cents a pound. Prices are f. o. b. plant.

iii. Apple Sauce - continued

20 percent of the sauce is now sold, the leading processor is Musselman, although there are many competing firms.

In contrast to canned apple slices, the large market for apple sauce is in the retail field. Due to the large size of this market, the pack of sauce in No. 10 tins is roughly equivalent to the No. 10 institutional pack of canned apple slices. Although sales to the institutional market have been made by Atlantic area processors, the same general comments apply as outlined under canned apples. It would be unreasonable to expect or even suggest that the Atlantic area processors attempt to secure a foothold in the retail market due to the well-entrenched firms now serving this market. The possibility may exist for limited private label sales on a price basis. However, the private label price structure in the United States is slightly lower than in Canada for the retail-type pack, consequently the profitability is somewhat questionable.

It does appear that an opportunity exists for sales into the institutional market where the price level is, if anything,

iii. Apple Sauce - continued

slightly higher than in Canada.[8] This market must be approached with a top quality product, well presented and aggressively merchandised.

iv. Apple Juice

Sales of apple juice in the United States have more than doubled in the past ten years and present indications are for a continued growth of the same magnitude. A substantial share of the retail market is now serviced with a glass pack and it is in this type of container that the most dramatic sales increases are expected.

There is little opportunity for Atlantic processors in the United States market where raw material prices for juice-quality apples are lower, resulting in extremely competitive pricing.[9] The level of pricing is such that transportation costs become a very critical factor and except for a few national labels, the market is serviced primarily by regional producers in each area.

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8 Prices as reported on April 19, 1969 for canners east of the Rockies were $5-5.12½ on 6/10's. Prices in the Annapolis Valley at that time ranged from $4.50 to $4.75 on 6/10's. Prices are per case, f.o.b, canners plant.

9 U.S. processors pay $0.75 cwt. for juice apples, whereas processors in Nova Scotia are paying an average of $1.40 cwt. for juice quality apples.

TABLE 1 ANNUAL PRODUCTION OF APPLES, CANADA.
1961 - 1968
(000 bushels)

Province:	1961	1962	1963	1964	1965	1966	1967	1968[1]
Nova Scotia:	3151	2461	3180	2430	3100	2962	3500	2500
New Brunswick:	525	500	475	425	450	450	500	500
Quebec:	3055	5985	5298	3765	7733	4100	7813	5604
Ontario:	5511	5098	5452	6522	5383	5933	5942	5889
British Columbia:	4279	6051	8631	6910	5650	7597	6737	5466
TOTAL:	16521	20095	23026	20052	22316	21042	24492	19959
% Produced in the Atlantic Region:	19%	12%	14%	12%	14%	14%	14%	

[1] Estimate.

Source: Crop and Seasonal Price Summaries, Canada Department of Agriculture, Ottawa.

TABLE 2 SALE OF APPLES TO PROCESSORS, CANADA
1961 - 1967
(000 bushels)

Province	1961	1962	1963	1964	1965	1966	1967
Nova Scotia:	1921	1667	2265	1669	2232	2095	2561
Quebec:	229	792	596	628	1179	589	805
Ontario:	2257	1990	2110	2836	2361	2829	2942
British Columbia:	770	1467	2446	1657	1708	3423	1467
TOTAL:	5177	5916	7417	6790	7480	7936	7775

Source: Crop & Seasonal Price Summaries,
Canada Department of Agriculture,
Ottawa.

TABLE 3 CANADIAN PACK OF PROCESSED APPLE PRODUCTS
1963 - 1967
(000 lbs.)

	1963	1964	1965	1966	1967
Canned	20,057	14,114	16,151	23,215	21,722
Sauce	18,319	22,694	26,188	19,421	23,160
Juice	145,684	133,151	168,563[1]	147,639[1]	156,062
Pie Filling	9,973	11,323	11,609	11,813	11,754
Frozen	4,863	2	9,578	8,029	7,929

1 Vitaminized only.

2 Confidential.

Source: Ibid.

TABLE 4 LIST OF CANADIAN PROCESSORS WHO PACKED APPLES FROM 1967 CROP.

ATLANTIC REGION:	Location:	
Annapolis Valley Canners Ltd.	Hantsport, N. S.	(2)
Annapolis Valley Canners Ltd.	Port Williams, N. S.	(1, 3)
Canada Foods Limited	Kentville, N. S.	(2)
Graves & Co. Ltd., M. W.	Hillaton, N. S.	(1)
Graves & Co. Ltd., M. W.	Berwick, N. S.	(1)
Kent Foods Limited	Wolfville, N. S.	(2)
Scotian Gold Co-Operative Ltd.	Coldbrook, N. S.	(1, 2, 3)
QUEBEC:		
Co-Op Monteregienne	Rougemont	(2, 3)
Federal Packers Limited	Laprairie	(1)
Gosselin, François	St. Famille	(3)
Lion Vinegar Company Ltd., The	Ville LaSalle	(2)
Quebec Apple Growers Co-Op.	Franklin Centre	(2, 1)
ONTARIO:		
Apple Products Limited	Glen Williams	(1)
Bowes Co. Ltd.	Colborne	(1)
Bright Canning Co. Ltd.	Niagara Falls	(2, 3)
Burtch Industrial Farm	Brantford	(1, 3)
Canada Vinegars Limited	Toronto 18	(2)
Edgewater Canners Ltd.	Northport	(2)
Ella-Riva Farms Limited	Lynden	(1)
Georgian Bay Fruit Growers Ltd.	Thornbury	(2, 3)
Imperial Food Products Ltd.	Ruthven	(2)
Lapp Brothers	Markham	(2)
Niagara Food Products Ltd.	Stoney Creek	(3)
Niagara Food Products Ltd.	Wheatley	(3)
Nicholson & Stettler Ltd.	Waterdown	(1)
Stafford Foods Limited	Hamilton	(3)
St. Jacobs Canning Co. Ltd.	St. Jacobs	(2)
St. Williams Preservers Ltd.	Simcoe	(1)
Sun-Pac Foods Limited	Weston	(2)

TABLE 4 LIST OF CANADIAN PROCESSORS WHO PACKED APPLES FROM 1967 CROP. - continued

BRITISH COLUMBIA:	Location:	
Barkwills Limited	Summerland	(1)
Bulmans Products Ltd.	Vernon	(1)
Cornwall Canning Co.	Summerland	(1, 3)
Fraser Valley Frosted Foods Ltd.	Chilliwack	(1)
Metcalfe Co. Ltd., L. C.	Vancouver	(1)
Pacific Coast Packers Ltd.	Burnaby	(1)
Snowcrest Packers Ltd.	Abbotsford	(1)
Sun-Rype Products Limited	Kelowna	(2, 3)
Western Vinegars Limited	Burnaby	(2)

Note: The numbers shown above (1, 2, and 3) relate to the items:

(1) apples, solid pack

(2) apple juice

(3) apple sauce.

TABLE 5 APPLE UTILIZATION - FRESH AND PROCESSED

1961 - 1966

	1961	1962	1963	1964	1965	1966
Percent of Total Crop Processed	31	30	32	34	34	38
Percent of Nova Scotian Crop Processed	61	68	70	68	72	70
Percent of all apples utilized in processing; Used in Nova Scotia	37	28	30	25	30	26

Source: Crop and Seasonal Price Summaries, Canada Department of Agriculture, Ottawa.

TABLE 6 UTILIZATION OF PROCESSING APPLES, CANADA AND UNITED STATES.

	Canada	U.S.
	(Percent)	
Juice	65	15
Slices		
Canned[1]	17	13
Frozen	3.4	9.0
Sauce	8	37
Dehydrated	1.4	6.5
Vinegar	.7)	
Pulp in SO_2	1.5)	19.5
Other	3.0)	

1 Includes Pie Filling.

Source: Crop and Seasonal Price Summaries, Canada Department of Agriculture, Ottawa
and
Profile and Prospects in Apple Products, 1967 - 1975 Business Planning Department, American Can Company.

TABLE 7

PERCENT OF CANADIAN PACK OF PROCESSED APPLE PRODUCTS PRODUCED IN THE ATLANTIC REGION.

Juice	22%
Slices	
Canned	88%
Frozen	6%
Sauce	24%
Pie Filling	4.5%
Dehydrated	44%
Pulp in SO_2	70%
Vinegar	55%

Source: Crop & Seasonal Price Summaries, Canada Department of Agriculture, Ottawa
and
Canneries & Bakeries Service Bulletin, D. B. S.

TABLE 8

PACK OF CANNED APPLES
1966 and 1967

	1966		1967	
	Actual Cases No.	Net Wt. Lb.	Actual Cases No.	Net Wt. Lb.
Maritimes:	512,322	20,092,162	X	X
Quebec:	-	-	-	-
Ontario:	63,646	2,439,584	X	X
B. C.:	17.973	683,353	X	X
Canada Totals:	593,941	23,215,099	555,059	21,722,635

X Confidential to meet secrecy requirements of the Statistics Act.

Source: Canners & Bakeries Service Bulletin, D. B. S., Ottawa.

TABLE 9 PACK OF CANNED APPLES 1967, SHOWING SIZE OF CONTAINER

SIZE OF CONTAINER	ACTUAL CASES
6/100 oz.	530,776
24/28 oz.	x
24/19 oz.	x
24/14 oz.	-
Total all sizes:	555,059

x Confidential to meet secrecy requirements of the Statistics Act.

Source:

Canneries & Bakeries Service Bulletin, D.B.S., Ottawa.

TABLE 10 PACK OF CANNED APPLE JUICE, PLAIN AND VITAMINIZED.

1966 and 1967

	1966		1967[1]	
	Actual Cases No.	Net Wt. lb.	Actual Cases No.	Net Wt. lb.
Maritimes:	866,816	32,124,016	991,780	36,542,400
Quebec:	x	x	x	x
Ontario:	1,271,426	47,867,716	1,469,934	55,581,301
B. C.	x	x	x	x
Canada Totals:	4,128,088	147,639,413	4,323,969	156,062,430

1 Includes canned apple juice, plain, to the amount of 146,694 cases.

x Confidential to meet secrecy requirements of the Statistics Act.

Source: Canneries & Bakeries Service Bulletin, D. B. S., Ottawa.

TABLE 11 PACK OF CANNED APPLE JUICE PLAIN AND VITAMINIZED, 1967 SHOWING SIZE OF CONTAINER.

SIZE OF CONTAINER	ACTUAL CASES
6/100 oz.	177,612
12/48 oz.	3,297,253
24/19 oz.	516,384
24/10 oz.	x
24/6 oz.	204,322
Other	x
Total all sizes:	4,323,969

Source: Canneries & Bakeries Service Bulletin, D.B.S., Ottawa.

TABLE 12 PACK OF CANNED APPLE SAUCE
1966 and 1967

	1966		1967	
	Actual Cases No.	Net Wt. lb.	Actual Cases No.	Net Wt. lb.
Atlantic Region:	x	x	x	x
Quebec:	-	-	x	x
Ontario:	379,761	9,930,381	x	x
B. C.:	x	x	x	x
CANADA TOTALS:	733,268	19,421,131	857,251	23,160,124

x Confidential to meet secrecy requirements of the Statistics Act.

Source: Canneries & Bakeries Service Bulletin, D. B. S., Ottawa.

TABLE 13 PACK OF CANNED APPLE SAUCE 1967 SHOWING SIZE OF CONTAINER.

SIZE OF CONTAINER	ACTUAL CASES
6/100 oz.	58,954
24/28 oz.	x
24/19 oz.	317,436
24/14 oz.	352,583
24/10 oz.	x
Other	x
Total all sizes:	857,251

x Confidential to meet secrecy requirements of the Statistics act.

Source:

Canneries & Bakeries Service Bulletin,
D. B. S., Ottawa.

TABLE 14

PACK OF APPLE PIE FILLING
1966 and 1967

	1966		1967	
	Actual Cases No.	Net Wt. lb.	Actual Cases No.	Net Wt. lb.
Maritimes:	x	x	x	x
Quebec:	-	-	-	-
Ontario:	256,011	9,175,000	282,171	9, 519,000
B. C.:	x	x	x	x
Canada Totals:	333,263	11,813,000	351,407	11,754,000

x Confidential to meet secrecy requirements of the Statistics Act.

Source: Canneries & Bakeries Service Bulletin, D. B. S. Ottawa.

TABLE 15 PACK OF APPLE PIE FILLING, 1967 SHOWING SIZE OF CONTAINER.

SIZE OF CONTAINER	ACTUAL CASES
6/100 oz.	80,842
12/48 oz.	-
24/28 oz.	-
24/19 oz.	187,639
Pails	82,926
TOTAL, ALL SIZES	351,407

Source: Canneries & Bakeries Service Bulletin, D.B.S., Ottawa.

TABLE 16 APPLES PROCESSED OTHER THAN BY CANNING

1966 and 1967

	1966	1967
Quick frozen not for reprocessing.....	x	5,454,238
Quick frozen for reprocessing (over 30 lbs.)	x	2,474,557
Total, quick frozen.....	8,028,905	7,928,795
Processed in SO_2.....	444,005	x

x Confidential to meet secrecy requirements of the Statistics Act.

Source: Canneries & Bakeries Service Bulletin, D. B. S., Ottawa.

TABLE 17

EXPORT OF CANNED APPLES, CANADA 1967 and 1968

	1967		1968	
	Pounds	Cases	Pounds	Cases
U. K.	11,035,721	282,000	5,274,930	135,000
U. S.	543,361	13,900	957,469	24,500
Caribbean	157,903	4,050	221,114	5,660
Other:	24,787	634	54,635	1,400
TOTAL:	11,772,385	300,584	6,508,148	166,560

1 One case equivalent to six No. 10 tins.

Source: Exports by Commodities, No. 65-004, D. B. S., Ottawa.

TABLE 18 EXPORT OF APPLE JUICE, CANADA 1967-1968

Country or Area:	1967 gallons	1967 cases [1]	1968 gallons	1968 cases [1]
U.K.	118.539	33,000	63,554	17,620
U.S.	53,186	14,750	35,667	9,900
Caribbean	99,106	27,500	99,007	27,500
Other	17,594	4,880	16,285	4,520
TOTAL	288,690	80,030	216,513	59,540

[1] One case equivalent to 12-48 oz. tins.

Source: Exports by Commodities, No. 65-004, D.B.S., Ottawa.

TABLE 19

APPLE DISPOSITION, CANADA AND U.S.

	CANADA	U.S.
Fresh	65-67 %	60 %
Processed	33-35 %	40 %

TABLE 20

PER CAPITA CONSUMPTION OF MAJOR APPLE PRODUCTIS, CANADA AND UNITED STATES.

	Canada	U.S.
	(pounds)	
Fresh	26	19
Canned Slices	1.0	.87
Frozen Slices	.4	.6
Juice	7.0	1.30
Sauce	1.0	4.0

Note: These figures are current estimates based on sources listed below.

Source: U.S. Food Consumption Sources of Data and Trends, 1909-63, U.S. Department of Agriculture.

Profile and Prospects in Apple Products, 1967-75. Business Planning Department, American Can Company, June 1967.

Apparent Per Capita Domestic Disappearance of Food in Canada, No. 32-226, D.B.S., Ottawa.

POTATO PRODUCTS

1. French Fried and Oil Blanched Potatoes

In 1964, the Federal Government discontinued the practice of issuing production statistics on frozen potato products, which prevents any quantitative evaluation to be made of the dimension of the existing market in Canada.

Over the past ten years, this item has undoubtedly had the fastest growth rate of any frozen fruit or vegetable item. Growth of the industry in Canada has been at a somewhat slower rate than in the U. S. and some indication of the magnitude of consumption can be secured by reviewing American statistics.

In 1956 only 2. 6 percent of the total U. S. production of potatoes was processed as french fries. In 1966, ten years later, 17. 1 percent of total production was processed in the frozen state. (Table 21). In that year, consumption passed the level of one billion pounds per annum. The most recent figures indicate that production for the first six months of 1968 was in excess of 750 million pounds or a yearly volume of 1. 5 billion pounds.

1. French Fried and Oil Blanched Potatoes - continued

On a comparative population basis, Canada's domestic consumption would be 150 million pounds per year. However, table stock potatoes are normally available in Canada at a lower price level than in many areas of the U. S. and consumption of frozen potatoes should not be expected to reach U. S. levels for that reason.

Consumption of fresh potatoes in Canada is declining with the latest per capita figure being 115 lbs. per person. The comparable figure for the U. S. is 76 pounds per person. The Executive Director of the National Potato Council has attributed the decline in sale of fresh potatoes to "not a dislike for potatoes but rather a change in work habits and an increase in available money for more glamorous and costly, though not necessarily better, foods."

A capacity to process french fried potatoes of at least 70 million pounds per annum exists in the Atlantic Region plants. As there are other plants with substantial plant capacity in Ontario, Manitoba, Alberta and British Columbia, it is not unreasonable to speculate that there is a total plant capacity capable of producing at least 150 million pounds of product per annum in Canada. On a per capita basis, this is equivalent to the very latest consumption figures issued in the U. S. Since per capita consumption is known

to be well under the U. S. level, one may conclude that Canadian processors have considerable excess capacity and that a substantial portion of this excess capacity is located in the Atlantic Region.

Exports of french fried potatoes from Canada have increased annually and a substantial percentage of the production from each of the Atlantic Region plants has been marketed overseas, primarily in the United Kingdom. Recently, Canada's largest producer has established a facility in the United Kingdom market. This was, undoubtedly, occasioned primarily due to devaluation of the pound sterling which resulted in a pricing level which was not economically feasible to meet by shipment from Canada.

Based on January 1969 price levels in the United Kingdom market, with due allowance for domestic and ocean freight charge, we have been advised that the net return to Canadian exporters is now at a level equal to the variable cost of production and the only basis for sales in that market is that a processor may cover overhead costs and thus help from a unit cost standpoint.

1. French Fried and Oil Blanched Potatoes - continued

Sale of product to the U. S. market is not feasible due to a substantial 17-1/2 percent import duty, and the low price level prevailing in that market. The low price level there is a result of over-capacity and lower unit costs occasioned by the exceptionally large production units that exist in the U. S. and are situated adjacent to the major markets in New England.

Increased sales will, therefore, have to be primarily directed to domestic consumption. Until domestic sales are at a level which will fully utilize available production capacity, expansion through new facilities should not be contemplated.

As mentioned previously, this item has had an outstanding sales growth. In the U. S., the frozen potato industry represents 40 percent of total vegetable production and represents a $320 million industry. A recent computer projection of growth made by the Dupont Company shows per capita consumption of the frozen product in the U. S. increasing from 7. 40 pounds (1966) to 18. 2 pounds (1976). To supply this demand would require slightly less than 4 billion pounds of finished product.

1. French Fried and Oil Blanched Potatoes - continued

If consumption in Canada was to increase at the U. S. rate, approximately 1 lb. per capita per year, production volume would have to increase by 20 million pounds a year. Assuming that the industry in the Atlantic Region supplies 60 percent of the Canadian market for french fried potatoes, then production in the region will have to increase by 12 million pounds annually. Although this seems to be a substantial yearly increase, a conservative estimate of the available capacity to supply increased domestic demand is 50 million pounds. This estimate is based on the fact that higher profit margins are obtainable by a diversion of sales from the U. K. market to the domestic market as domestic demand warrants. Exports to the U. K. in 1968 were 35 million pounds. During the same period there was an estimated unused capacity in P. E. I. of close to 10 million pounds.

With production capacity of 50 million pounds or more available to supply domestic market requirements, it is unlikely that additional production facilities would be required for at least four or five years. Certainly there is no urgent need for new production facilities in the region at the present time. However, already established firms with a sound sales record may find it necessary to expand to meet market demands and such expansion should be encouraged.

2. Canned Small Whole Potatoes

a. Potential for Development

Production of this item in Canada is quite limited with some 150,000 to 200,000 cases being produced annually. Two production facilities for this product are located in the Atlantic provinces, both in Prince Edward Island. The raw product used is the 2" and under small potato available from fresh potato packers supplying the table stock market. The raw material is available in large volume from these grading operations and as it is a surplus by-product, price is very low, averaging $0.50 to $0.75/cwt.

Although the Canadian market for this product is expanding, no substantial additional volume can be forecast for the immediate future. Expansion possibilities, if any, would be in the export market to the United States and the United Kingdom.

b. The U.S. Market

Production of this item in the U.S. amounted to 3.3 million cases of all can sizes in 1956[1]. This was equivalent to 1.3 percent of the total fresh and processed consumption. Ten years later (1966), the percentage canned amounted to 1.5 percent of total consumption.

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[1] National Canners Association

2. Canned Small Whole Potatoes - continued

b. The U. S. Market - continued

The market is, therefore, static with little growth in prospect. Production is centered in California and Maryland, but the product is canned in nearly all major growing areas. The predominant size of can is No. 303, packed 24/case. The pack is heavily weighted toward the No. 10 can, with total poundage packed in this size being almost double that in the No. 303 size, on a drained weight basis.

The prospects for penetration of the United States market are not bright. Because of the extremely low raw material costs, other costs are of greater significance in determining the competitive advantage of a producing region[2].

Because U. S. processors have lower costs for all packaging materials, process machinery and other supplies, as well as economies of scale, it is doubtful that Canadian processors could compete profitably in this market.

The potential for this product in the United Kingdom market has been covered in the section dealing with the United Kingdom market for canned foods.

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2 Two to 2-1/2 cases (24-303) can be obtained per hundred pounds of raw stock, and the cost of raw material, even at $1.00/cwt. is only $0.40 to $0.50 per case.

2. Canned Small Whole Potatoes - continued

b. The U.S. Market - continued

Varietal, as well as processing, problems will have to be overcome before any serious penetration of this market will be accomplished.

3. Starch

Based on information secured from the Research and Productivity Council in New Brunswick, the lowest possible production cost of potato starch would be $0.06-1/2 a lb. Corn starch is now available from Asia and Indonesia for even less. This product would not appear to offer scope for economic development unless subsidized.

4. Alcohol

Production of alcohol from potatoes is considerable more expensive than production from corn. Therefore, market possibilities would appear to be very limited and this is substantiated in an article by G. G. Pearson.[3]

5. Flour

The market for potato flour is very limited and is well supplied with substitutes.

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[3] Pearson, G. G. The Economics of Ethyl Alcohol Production with Particular Reference to Potatoes as a Raw Material, Canadian Farm Economics, Volume 3, Number 6, February 1969

6. Animal Feed

As an animal feed, this product is very low in protein and must be used with supplements. Consequently, with feed barley selling at $6.00 per ton, the potato product would have a value of $45.00 per ton. To produce the product at this price level would entail purchase of potatoes at 1/8 cent per pound.

TABLE 21 THE USE OF POTATOES AS FOOD IN THE UNITED STATES OF AMERICA:

PRODUCT FORM:	1956	1966	Difference
Fresh:	86.3%	58.7 %	-27.6%
Chips, etc.	8.0	14.1	+ 6.1
Dehydrated:	1.8	8.6	+ 6.8
Frozen:	2.6	17.1	+14.5
Canned:	1.3	1.5	+ 0.2
	100%	100%	

Source: The Grower, November 1968

PEAS

1. Production in Canada

The production of green peas for processing was of limited importance in the Atlantic Region until 1958-1959. Following establishment of processing facilities for the freezing of this product, acreage increased to 4,970 acres in 1961, or 10 percent of Canada's total. By 1967, the acreage increased further to 8710 acres or 15 percent of the total acreage devoted to this crop in Canada.

About 80 percent of the Atlantic Region acreage of peas is grown for processing in the frozen state. In recent years, the Atlantic Region has produced from 25 to 27 percent of Canada's total frozen processed peas. Ontario is the leading producer of frozen peas, with 36 percent. British Columbia produces approximately the same volume as the Atlantic Region, 24 to 28 percent. The balance of the production of frozen peas is concentrated in Alberta, with a very limited acreage in Quebec. (Table 22).

The production of peas for canning is concentrated in Quebec and Ontario, with a combined production of approximately 80 percent of Canada's total pack. Slightly over 8 percent of the canned pack originates in the Prairie Provinces, primarily Alberta.

1. Production in Canada - continued

Approximately 11 percent of the pack originates in British Columbia and the Atlantic Region. The acreage devoted to peas for canning in the Atlantic Region in 1967 and 1968 was 2,200 and 2,100 acres.

Based on average yields secured in the area the pack of canned peas in the Maritimes was approximately 7.5 and 6.2 percent of the total Canadian pack in 1967 and 1968. (Table 23).

2. Frozen Peas

The Atlantic Region now produces approximately 25 to 27 percent of Canada's total pack of frozen peas. However, the present installed capacity in the various processing plants now located in the Atlantic Region is capable of increasing production by at least 10,000,000 pounds based on 1967 production figures[1]. If per capita consumption of frozen peas increases by one-half pound per year and if traditional market shares are maintained, it will be at least four years before demand begins to push installed production capacity in the Atlantic Region.

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[1] Based on confidential and authoritative source.

2. Frozen Peas - continued

Exports of frozen peas from Canada are primarily in bulk (50 lb. cases) for repacking into consumer and institutional packages. The major part of these exports have been to the United Kingdom, where entry is on a duty-free basis.

3. Canned Peas

Atlantic Region processors pack from 6 to 8 percent of all peas canned in Canada. In 1968, Atlantic Region processors packed over 9.5 millions pounds of canned peas while the total Canadian pack was 156.5 millions pounds. This pack was marketed in the Atlantic Region, and based on available consumer purchase data (Appendix 0) it accounts for approximately 55 percent of all canned peas sold in the region at the retail level. Regional processors account for substantially the entire volume sold to the institutional market in the Region.

At the retail level, regional processors face stiff competition from pre-sold, nationally advertised brand names, such as: Aylmer, Green Giant and Libby. These nationally known processors have plants in Ontario and Quebec from which they supply the Atlantic Region.

3. Canned Peas - continued

Exportation of canned peas in any substantial quantity is inhibited by the relatively high cost of transporting such a low valued item, and competition from low cost producers in Quebec and Ontario who have well established brand names.

If canned pea production is to be increased in the Atlantic Region, it would in all probability entail establishment of a facility by one of the major processing companies with an established regional market. Factors which might weigh heavily against such an eventuality are the following:

a. The major international companies processing peas are based in Ontario, with plants in both Ontario and Quebec. These plants pack sweet corn as a complementary product, since a substantial amount of the same plant investment can be used for both products. As the pack of canned corn is approximately equal in size to that of peas, combined operations on two major items such as this contributes greatly to reduced overhead costs per unit.

3. Canned Peas - continued

b. Due to climatic considerations, sweet corn for canning cannot be grown over a sufficient length of time in the Atlantic Region to result in an economic operation.

c. In recent years, these major companies have become vertically integrated from a can manufacturing standpoint. This has proven to be a real cost reducing factor. However, shipping empty cans for processing from Ontario points would be most uneconomic. Therefore, any expansion by firms with can manufacturing facilities may be expected to take place in, or very close to, established production locations rather than in the Atlantic Region.

Exports of canned peas from Canada are primarily branded merchandise in consumer size package under various internationally known labels. As in the case of frozen peas, most exports are to the United Kingdom.

TABLE 22

CANADIAN PACK OF FROZEN PEAS BY REGION 1966 - 68

	1966 Net Weight Pounds	1967 Net Weight Pounds	1967 % Canadian Pack	1968 Net Weight Pounds	1968 % Canadian Pack
Atlantic Region	16,471,272	14,486,143	26.4	16,246,897	24.8
Quebec	x	1,770,000*	3.3	854,000*	1.3
Ontario	12,068,299	18,444,087	35.1	24,038,174	36.5
Prairies	x	3,630,000*	6.9	8,540,000*	13.0
British Columbia	14,476,769	15,011,356	28.3	16,043,082	24.4
TOTAL	49,916,291	53,148,461	100.0	65,729,686	100.0

* Estimated from acreage statistics.

x Confidential to meet secrecy requirements of the Statistics Act.

Source: Canneries and Bakeries - Service Bulletin, D.B.S., Ottawa.
Quarterly Bulletin of Agricultural Statistics, No. 21-003, D.B.S., Ottawa.

TABLE 23

CANADIAN PACK OF CANNED PEAS BY REGION
1966 - 68

	1966 Net Weight Pounds	1967 Net Weight Pounds	1967 % Canadian Pack	1968 Net Weight Pounds	1968 % Canadian Pack
Atlantic Region	x	7,200,000*	7.5	9,670,000*	6.2
Quebec	40,324,029	40,957,359	42.6	64,907,523	41.5
Ontario	30,114,318	35,958,963	37.4	61,044,389	39.0
Prairies	8,848,620	8,072,730	8.4	13,633,120	8.7
British Columbia	x	3,970,000*	4.1	7,220,000*	4.6
TOTAL	93,599,445	96,182,898	100.0	156,500,605	100.0

x Confidential to meet secrecy requirements of the Statistics Act.

* Estimated from acreage statistics.

Source: Ibid

TABLE 24

ACREAGE OF PEAS

YEAR	ATLANTIC REGION	CANADA
1931	69	
1941	403	
1951	884	
1961	4970	48,850
1962	6050	52,280
1963	6490	52,190
1964	9200	61,280
1965	7840	55,310
1966	7360	53,540
1967	8710	57,700

Source: Crop & Seasonal Price Summaries, Canada Department of Agriculture.

TABLE 25 PEAS - TONNAGE AND ACREAGE USED BY PROCESSORS, 1966-1967

	Atlantic Region		Quebec		Ontario		Prairies		B. C.		Canada	
	1966	1967	1966	1967	1966	1967	1966	1967	1966	1967	1966	1967
Acres planted under contract	7360	8710	15290	19160	20360	20610	5740	4740	4790	4480	53540	57700
Acres not harvested	150	930	970	2750	1370	880	380	400	70	50	2940	5050
Net Acres	7210	7780	14320	16410	18990	19730	5360	4300	4720	4430	50600	52150
Tons processed from above	10120	9030	13550	13930	18200	32710	6640	5120	9000	7150	57310	67940
Pack yield/ acre in tons	1.4	1.2	0.9	0.8	1.0	1.7	1.2	1.2	1.9	1.6	1.1	1.3
Percent of total pack	17.6	13.3	23.2	20.0	31.7	48.0	12.0	8.0	15.0	10.0	100.0	100.0
Percent of total acreage	14.2	14.7	28.3	31.1	37.5	37.4	10.6	8.1	9.4	8.7	100.0	100.0

Source: Canneries & Bakeries, Service Bulletin, Industry Division, D. B. S., Ottawa.

TABLE 26 IMPORTS AND EXPORTS OF CANNED AND FROZEN PEAS CANADA, 1961 - 68

FROZEN

Year	Exports	Imports
	Net Weight Pounds	
1962	1,192,000	422,000
1963	6,124,000	273,000
1964	5,239,000	1,353,000
1965	6,330,000	76,000
1966	13,121,000	387,000
1967	10,920,000	4,045,278
1968	5,412,000	4,757,225

CANNED

Year	Exports	Imports
	Net Weight Pounds	
1961	1,519,000	623,000
1962	3,427,000	693,000
1963	1,247,000	424,000
1964	1,564,000	414,000
1965	2,785,000	90,000
1966	1,596,000	90,000
1967	1,352,000	N/A
1968	1,306,000	N/A

Source: Crop and Seasonal Price Summaries, Canada Department of Agriculture, Ottawa.
Imports by Commodities, No. 65-007, D.B.S., Ottawa.
Exports by Commodities, No. 65-004, D.B.S., Ottawa.

BEANS

1. Introduction

The production of green and wax beans for processing was of limited importance in the Atlantic Provinces until 1963. At that time, certain frozen food plants commenced packing this product. Acreage increased to a level of 2,500 acres where it has remained quite constant.

Approximately 60 percent of the acreage processed is processed in the frozen state while the balance is canned. In 1967, the processors in the region accounted for about 20 percent of Canada's production of frozen beans. A substantial amount of this production was exported or sold in other provinces. Although the area has the basic capacity to produce a much larger volume of this product, certain factors which we will review preclude further large scale development at this time.

2. Canned Beans

Production of canned beans in Canada has increased from 58 million pounds in 1961 to 92 million pounds in 1968. Domestic production increased during this period but a substantial part of this increased production was occasioned by a large export market which developed in Germany. Sales to this market have averaged over 20 million pounds per annum since 1965.

2. Canned Beans - continued

Quebec holds the dominant position in the canned bean market, producing approximately 70 percent of all canned green and wax beans. Atlantic processors, all located in Nova Scotia, have higher raw material and transportation costs than Quebec processors in supplying the Central Canadian market. Increased consumption in this growing market will, no doubt, be supplied by national and private label packers in Quebec who have adequate capacity to meet increased demand.

3. Frozen Beans

The production of frozen beans in Canada increased from a level of 6-1/2 million pounds in 1961-1962 to well over 12 million pounds in 1963. This dramatic increase in production was occasioned by new processing facilities, including some in the Atlantic provinces, to supply an increasing consumer demand in Canada, to reduce dependence on imports and to supply a then developing export market. From 1963 to 1968, production increased less rapidly, from 12 million pounds to 16 million pounds.

Imports have been practically eliminated, declining from 2.1 million pounds in 1962 to 150,000 lbs. in 1966. Exports have not increased in recent years and would appear to have levelled out at approximately 900,000 pounds annually.

3. Frozen Beans - continued

Unless new processes are developed to broaden the market, one would not expect any further substantial increase in consumption over normal population growth. Sufficient plant capacity exists in the Atlantic provinces to supply any increase of this nature.

TABLE 27 PACK OF CANNED GREEN & YELLOW BEANS IN CANADA, 1967 and 1968

	1967	1968
	Net Weight Pounds	
Atlantic Region:	6,510,000[1]	5,400,000[1]
Quebec:	79,024,668	64,887,268
Ontario:	14,576,021	11,700,000[1]
Prairies:	5,900,000[1]	4,510,000[1]
British Columbia:	7,280,000[1]	5,750,000
CANADA TOTAL:	113,287,698	92,368,481

[1] Estimated from acreage statistics.

Source: Service Bulletin, Industry Division, D. B. S., Ottawa.

TABLE 28 PACK OF FROZEN, GREEN & WAXED BEANS IN CANADA, 1967 and 1968

	1967	1968
	Net Weight(lbs)	
Atlantic Region:	3,360,000[1]	2
Quebec:	860,000[1]	2
Ontario:	6,106,802	2
Prairies:	-	2
British Columbia:	5,790,806	2
Canada, Total:	16,121,848	

1 Estimated from acreage statistics.

2 Confidential to meet secrecy requirements of the Statistics Act.

Source: Ibid.

TABLE 29

PACK OF FROZEN AND CANNED BEANS CANADA 1961 - 1968

('000 pounds)

	1961	1962	1963	1964	1965	1966	1967	1968
FROZEN								
Green beans	6050	6368	11811	13265	11747	13125	13861	14211
Wax beans	653	567	1576	2355	1837	1965	2260	1714
CANNED								
Green beans	27287	26433	25853	36452	32617	36662	43516	46840
Wax beans	31322	45453	47979	56380	48633	72681	69771	45528

Source: Crop and Seasonal Price Summaries, Canada Department of Agriculture, Ottawa.

TABLE 30 BEANS - TONNAGE AND ACREAGE USED BY PROCESSORS, 1966-67

	Atlantic Region		Quebec		Ontario		Prairies		B. C.		Canada	
	1966	1967	1966	1967	1966	1967	1966	1967	1966	1967	1966	1967
Acres planted under contract	2600	2560	15040	16180	4570	5080	780	1010	1710	1830	24700	26660
Acres not harvested	10	400	860	1530	380	130	30	180	60	90	1340	2330
Net acres	2590	2160	14180	14650	4190	4950	750	830	1650	1740	23360	24330
Tons processed from above	4880	4690	27220	29530	8280	9060	1040	1840	5820	5570	47240	50690
Pack yield/ acre (in tons)	1.9	2.2	1.9	2.0	2.0	1.8	1.4	2.2	3.5	3.2	2.0	2.1
Percent of total pack	10.3	9.2	57.6	58.3	17.5	17.8	2.3	3.6	12.3	11	100	100

Source: Canneries and Bakeries - Service Bulletin, Industry Division, D.B.S., Ottawa.

STRAWBERRIES

The major facilities for the production of processed strawberries are located in British Columbia. The soil and climatic conditions are very favourable in British Columbia and high yields of fruit are obtained. Raw material prices to processors are substantially lower, one major factor being the lack of competition from the fresh market due to distance from major consuming centres. British Columbia growers also provide processors with the most suitable variety of fruit for processing.

Although growing conditions for strawberries are good in the Atlantic Region, high fresh market prices result in growers being more interested in producing for that market.

A large market does exist in Canada for processed strawberries. At present, well over ten million pounds of frozen processed strawberries are imported annually, particularly from Mexico and Holland.

To compete with imports, growers have to sell their product to processors at a lower level than to the fresh market.

Strawberries - continued

The price level offered by processors is such that growers cannot make a fair profit. Sufficient freezing capacity exists in a number of plants in each province for a substantial output. In fact, this capacity could easily produce all of the product now being imported. With a ready market and adequate freezing capacity, the problem is mainly lack of raw material at a competitive price to meet products produced in British Columbia and outside the country.

TABLE 31 STRAWBERRIES - ANNUAL PRODUCTION (in 1,000 quarts)

PROVINCE	1961	1962	1963	1964	1965	1966	1967	1968
P. E. I.	1900	1400	1550	1650	1600	1100	1700	1050
N. S.	2300	1800	2000	2200	2000	2100	2900	2500
N. B.	1400	1000	1500	2000	1300	1300	2300	2290
ATLANTIC REGION:	5600	4200	5050	5850	4900	4500	6900	5840
Quebec:	4100	6476	6558	5500	1995	7250	7000	7600
Ontario:	7986	5989	4501	7995	7581	7692	8032	10710
B. C.	5336	8790	8057	11521	2806	11253	10977	10805
TOTAL CANADA:	23022	25455	24166	30866	17282	30695	32909	34955
PERCENT GROWN IN THE ATLANTIC REGION:	24.3	16.5	20.8	19.0	22.5	14.6	21.0	16.7

Source: Crop & Seasonal Price Summaries,
Production & Marketing Branch,
C. D. A. Ottawa.

TABLE 32 STRAWBERRIES - COMMERCIAL PRODUCTION AND SALES TO PROCESSORS

YEAR	Production in '000 quarts	Farm Value $'000	Sales to Processors '000 qts.	Sales to Processors % of production
ATLANTIC REGION				
1961	5,600	1,235	x	x
1966	4,500	1,210	1,455	32.3
1967	6,900	-	-	-
B.C.				
1961	5,336	1,281	4,371	82
1966	11,253	3,258	11,050	98
1967	10,977	-	-	-
ONTARIO				
1961	7,896	1,750	2,564	32.1
1966	7,692	2,169	1,125	14.6
1967	8,032	-	-	-

x Confidential

Source: Ibid

TABLE 33 PACK OF PROCESSED STRAWBERRIES, CANADA 1966-1968

FROZEN	1966	1967	1968
B. C.	16,194,000	15,087,449	15,199,042
Ontario:	x	x	x
Atlantic Region:	x	x	x
TOTAL:	18,237,000	16,825,218	16,600,651
CANNED			
B. C.	2,641,000	2,471,000	2,808,646
Ontario:	812,000	326,000	385,624
TOTAL:	3,453,000	2, 796,579	3,194,270

x Confidential to meet secrecy requirements of the Statistics Act.

Source: Canneries & Bakeries - Service Bulletin, D. B. S., Ottawa.

TABLE 34 FROZEN STRAWBERRIES - PRODUCTION BY SIZE OF CONTAINER - (in lbs.)

YEAR:	1 lb. and Under	1 to 30 lbs.	Over 30 lbs.
1961	8,440,000	3,224,000	2,052,000
1962	7,893,000	3,824,000	2,679,000
1963	7,545,000	2,129,000	2,883,000
1964	9,100,000	4,170,000	4,685,000
1965	4,884,000	1,683,000	1,877,000
1966	9,358,000	2,819,000	6,060,000
1967	--	--	--
1968	8,177,000	2,622,000	5,860,000

Source: Crop & Seasonal Price Summaries, Production and Marketing Branch, C.D.A., Ottawa.

TABLE 35 FROZEN STRAWBERRIES - DOMESTIC PRODUCTION AND IMPORTS

YEAR	CANADIAN	IMPORTS	TOTAL
1960	12,081,000	7,714,000	19,795,000
1961	13,716,000	8,157,000	21,873,000
1962	14,396,000	8,442,000	22,838,000
1963	12,507,000	8,227,000	20,734,000
1964	17,955,000	9,478,000	27,433,000
1965	8,444,000	18,065,000	26,509,000
1966	18,237,000	11,791,000	30,028,000
1967	16,825,218	11,483,000	28,308,218
1968	16,600,651	10,513,117	27,113,768

Source: Crop & Seasonal Price Summaries, Production & Marketing Branch, C. D. A., Ottawa.

TABLE 36 IMPORT OF FROZEN STRAWBERRIES INTO CANADA, 1961 - 1967.

YEAR	POUNDS	VALUE	VALUE PER LB.
1961	8,157,000	1,464,000	$.179
1962	8,442,000	1,522,000	.180
1963	8,227,000	1,503,000	.183
1964	9,478,000	1,823,000	.192
1965	18,065,000	3,647,000	.202
1966	11,791,000	2,537,000	.215

Source: Imports by Commodities, No. 65-007, D.B.S., Ottawa.

BLUEBERRIES

1. Production

Eastern Canada and the States of Maine and Michigan are the major regions producing commercial quantities of blueberries. Due to weather conditions, the harvested crop has fluctuated from levels of over-supply to one of serious shortage. Prices paid by processors for blueberries have also fluctuated widely, based on supply and demand. The commercial aspects of this crop in the Atlantic Region are closely tied to developments in the State of Maine.

This crop is harvested in all four Atlantic Provinces and the major volume is obtained in Nova Scotia and New Brunswick. Modern frozen blueberry processing plants are located in Nova Scotia and secure their raw product supplies from all four provinces. New Brunswick, however, has a substantial acreage controlled by American interests and normally exports a substantial volume for processing in Maine.

Future development of this crop is tied closely to the ARDA programme. Improved production practices, combined with new processing facilities in Nova Scotia and Quebec, will serve to substantially increase production. It would appear that production levels can be anticipated to reach the volumes outlined in Table 37.

1. Production - continued

The anticipated production indicated on Table 37 would appear to be reasonably attainable, based on past performance. It is obvious that new outlets and new market areas must be developed, otherwise there will be serious over-production, which would undoubtedly result in severely depressed prices for the raw product.

2. Marketing

Although the domestic blueberry market has been steadily expanding, the major market is still in the U.S. and, specifically, with large industrial users. This market demands a high quality product and the berries must be Individually Quick Frozen. There now are a number of new modern blueberry plants equipped to deliver such a product.

Maine and Eastern Canada produce, on average, equal quantities of low-bush blueberries, and both areas are competing, in part, for the same market. The results of an industrial survey conducted by the University of Maine, on the acceptance of low-bush blueberries by industrial users in the U.S., is of interest in indicating market potential[1].

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[1] Dunham, W. C., and Abdalla, D. A. "Frozen Status in Lowbush Blueberries as Related to the Industrial Market," University of Maine.

2. Marketing - continued

In general, buyers preferred the low-bush blueberry as compared to high-bush blueberries. The smaller size of the berry was associated with superior quality and sweetness. The findings indicated that the market trend is definitely upward but growth is not expected to be dramatic.

Until recent years, high-bush blueberries were utilized primarily on the fresh market but now they have gained acceptance as a processing berry. Low-bush berries will find increasing competition from the high-bush type which can now be mechanically harvested.

TABLE 37 BLUEBERRY PRODUCTION FORECASTED BY PROVINCE - EASTERN CANADA.

Province:	Anticipated Production	Previous Peak Year
Nova Scotia:	10-12,000,000 lbs.	11,700,000 lbs. (1967)
New Brunswick:	8-9,000,000 lbs.	7,000,000 lbs. (1967)
Newfoundland:	3,000,000 lbs.	2,300,000 lbs. (1966)
Prince Edward Island:	1,000,000 lbs.	500,000 lbs. (1966)
Quebec:	18-20,000,000 lbs.	16,500,000 lbs. (1966)
TOTAL:	36-45,000,000 lbs.	

Source: Crop & Seasonal Price Summaries, C. D. A.

TABLE 38 PRODUCTION OF BLUEBERRIES IN CANADA, BY PROVINCE
1961 - 1968

	1961	1962	1963	1964	1965	1966	1967	1968
				('000 lbs.)				
Newfoundland:	2934	1250	1400	1036	2264	2361	1690	950
Prince Edward Island:	451	238	1500	200	250	550	710	450
Nova Scotia:	5700	7400	7000	5100	7000	7600	11700	2100
New Brunswick:	4500	4000	4000	3000	2500	7000	7000	1500
Quebec:	2715	3429	8551	8762	3081	16550	5461	6010
Ontario:		----------not available----------						
British Columbia:	1763	1909	2853	2763	3050	3448	4572	5153
Total Canada:	18063	18226	23954	20861	18145	37509	31133	16163
Total Atlantic Region:	13585	12888	12550	9336	11914	17511	21100	5000
% produced in Atlantic Region:	75.2	70.7	52.3	44.7	66	46.6	67.7	30

Source: Crop & Seasonal Price Summaries, C. D. A.

TABLE 39 DISTRIBUTION OF TOTAL PRODUCTION OF BLUEBERRIES IN CANADA, 1961-66

Year	Total Production	Sold to Processors ('000 lbs.)	Exported	Fresh
1961	18063	7851	4414	5798
1962	18226	7446	4929	5851
1963	23954	7220	9308	7426
1964	20861	7312	7287	6260
1965	18145	9100	5720	3325
1966	37509	16066	15004	6399

Source: Crop & Season Price Summaries, Canada Department of Agriculture, Ottawa.

TABLE 40 FROZEN AND CANNED BLUEBERRIES PACKED IN CANADA, 1961 -1966

Year	Frozen	Canned ('000 lbs.)	Total
1961	4290	454	4744
1962	4345	772	5117
1963	4172	639	4811
1964	4502	795	5297
1965	8336	741	9077
1966	12287	1143	13430

Source: Crop & Seasonal Price Summaries, Canada Department of Agriculture, Ottawa.

TABLE 41 EXPORTS OF FROZEN BLUEBERRIES FROM CANADA, 1961 - 1966

Year	Frozen Exports ('000 lbs.)
1961	3935
1962	4532
1963	8068
1964	4955
1965	6164
1966	4432

Source: Crop & Seasonal Price Summaries, Canada Department of Agriculture, Ottawa.

RASPBERRIES

Although there is a substantial market for both fresh and frozen raspberries, production has been very limited. The major reasons for this are disease and lack of winter hardy varieties.

This lack of suitable varieties has been the major deterrent to development of large acreages, which precludes the possibility of processing this item in the Atlantic Region at this time.

TABLE 42 RASPBERRIES - ANNUAL PRODUCTION
('000 quarts)

Province	1963	1964	1965	1966	1967	1968
Nova Scotia	25	35	32	40	34	41
New Brunswick	50	50	50	60	50	45
Quebec	1383	1150	1165	1345	1003	800
Ontario	2450	2358	2083	1140	1413	1420
B. C.	8755	10172	10155	11325	11480	8423
TOTAL CANADA:	12664	13765	13485	13910	13980	10729

Source: Crop & Seasonal Price Summaries, Canada Department of Agriculture, Ottawa.

CRANBERRIES

Commercial production of cranberries has been shown to be feasible, particularly in Nova Scotia. Data covering capital requirements, yields, and profitability levels as well as scope of markets have been well documented in previous reports[1].

With 80 percent of Canada's consumption presently supplied by U.S. sources, there is a very considerable market available for this product. Utilization in Canada is well over 7 million pounds, with Canadian production providing approximately 2 million pounds.

The main obstacle to increased production would appear to be the very high initial investment required, averaging $3,000. to $5,000. per acre. With adequate fast freezing facilities now available, raw material availability would appear to be the main restraining factor. However, it has been shown that greatly increased production could be secured from existing acreages in Nova Scotia if modern agricultural techniques were applied.

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[1] The Maritime Berry Processing Industry, Food Products Branch, Department of Industry, Ottawa, 1966.

PEARS

Pears are the second largest tree fruit crop grown in the Atlantic Region. When compared to apples, production is limited and is confined to the Annapolis Valley in Nova Scotia. Although pear production in Canada has been increasing, the volume produced in Nova Scotia has not increased substantially over the past few years. (Table 44).

The production and canning of pears is centred in Ontario and British Columbia. In 1968, British Columbia packed 70 percent of the Canadian pack of Bartlett pears, while Ontario packed 90 percent of all Kieffer pears packed in Canada. In 1968, the total Canadian pack of canned pears reached 33.5 million pounds, net weight. The pack of Bartlett pears accounted for 52 percent and Kieffer, 48 percent of the total pack.

Substantial quantities of fresh and, particularly, canned pears are imported into Canada. Imports have steadily mounted to a peak of 12 million pounds of the canned product by 1966. Processors in Canada have been hard-pressed to compete with these imports which have been frequently subsidized by the exporting country. Consequently, prices secured by the processors have not been at economic levels to justify expansion of the industry.

Pears - continued

Raw material costs in the Atlantic Region have been traditionally lower than prices prevailing in other producing regions, such as Ontario and British Columbia. From 1961 to 1965, the farm value in Nova Scotia averaged $1.85 per bushel; Ontario $2.03 per bushel; and British Columbia $2.67 per bushel (Table 47). Although the raw material price may be favourable as compared to other provinces, there has been little inclination on the part of processors to aggressively develop markets for this item. The main reason being the severe competition from the previously mentioned imports.

Based on consumer brand preference data presented in Appendix O, regional processors in the Atlantic Provinces supply just over 25 percent of the local market, foreign imports hold 5 percent of the local market, while other Canadian companies supply the remaining volume. Canadian Canners control over 50 percent of the market at the retail level, which they supply from plants in Ontario and British Columbia.

Indications are that the share of the market held by foreign imports will continue to increase.

Increasing competition from these sources, plus the already well established market position of nationally known firms on the regional market, limit the degree to which regional processors could further penetrate the local market.

Pears - continued

Large scale processing operations, as well as a proliferation of regional brands, preclude the possibility of developing a substantial market west of the Atlantic Region.

Per capita consumption of canned pears has not changed significantly since 1960 and there is little to suggest any great increase in the future.

At present, the outlook from a marketing standpoint is not sufficiently favourable to recommend or to expect expansion of processing in this product.

TABLE 43 LIST OF CANADIAN PROCESSORS WHO PACKED PEARS IN 1968.

ATLANTIC REGION:	Location:	
Annapolis Valley Canners Ltd.,	Berwick, N.S.	(1,2)
Scotian Gold Co-Operative Ltd.,	Coldbrook, N.S.	(1,2)
ONTARIO:		
Arkell Foods	Grimsby	(1,2)
Boese Foods Limited	St. Catharine's	(1,2)
Bright Canning Co. Ltd.,	Niagara Falls	(1,2)
Canadian Canners Ltd.	St. David's	(1,2)
Culverhouse Canning Co.	Vineland Station	(1,2)
Lincoln Canning Co.	St. Catharine's	(2)
The Niagara Food Products Ltd.	Stoney Creek	(1,2)
The Ontario Reformatory	Guelph	(1,2)
Queensway Canning Co. Ltd.	St. Catharine's	(2)
Stafford Foods Limited	Hamilton	(1)
Tregunno Niagara Farms Ltd.	Ridgeville	(2)
BRITISH COLUMBIA:		
Barkwills Limited	West Summerland	(1)
Berryland Canning Co. Ltd.	Haney	(1,2)
Canadian Canners Limited	Penticton	(1)
Cornwall Canning Co.	Summerland	(1)
The Milne Cannery Co.	West Summerland	(1)
York Farms	Sardis	(1,2)

Note: The numbers shown above (1,2) relate to the items:

(1) pears, Bartlett
(2) pears, Kieffer.

TABLE 44

PRODUCTION OF PEARS IN CANADA, BY REGION, 1962 - 1968

('000 bushels)

	1962	1963	1964	1965	1966	1967	1968
Nova Scotia:	48	64	42	48	82	63	60
Ontario:	1069	731	1102	887	1113	894	800
British Columbia:	603	893	855	130	867	790	863
Canada, total:	1720	1688	1999	1065	2062	1747	1723

Source: Crop & Seasonal Price Summaries, Canada Department of Agriculture, Ottawa.

TABLE 45

IMPORTS OF CANNED PEARS INTO CANADA BY COUNTRY OF ORIGIN, 1962 - 1968.

('000 lbs.)

	1962	1963	1964	1965	1966	1967	1968
United States of America:	4418	3913	2944	2902	3053	3038	1942
Australia:	1195	3163	6868	8482	9844	6961	7469
Other:	-	-	203	-	-	157	564
TOTAL:	5612	7076	10015	11384	12897	10157	9976

Source: Imports by Commodities, No. 65-007
D. B. S., Ottawa.

TABLE 46 PRODUCTION OF PEARS IN CANADA AND SALES TO PROCESSORS, 1962-1966

('000 bushels)

	1962	1963	1964	1965	1966
Production:	1720	1688	1999	1065	2062
Sales to Processors:	938	755	1044	694	994
Percent of Crop:	54.5	44.7	52.5	65.2	48.2

Source: Crop & Seasonal Price Summaries, Canada Department of Agriculture, Ottawa.

TABLE 47 AVERAGE FARM VALUE BY REGION, 1962 - 1966

($ per bushel)

	1962	1963	1964	1965	1966
Nova Scotia:	1.58	1.64	2.00	2.25	1.45
Ontario:	1.78	2.19	2.04	2.29	2.14
British Columbia:	2.47	2.56	1.89	3.98	2.00

Source: Crop & Seasonal Price Summaries, Canada Department of Agriculture, Ottawa.

COLE CROPS

1. Production

The cole crops normally used for processing into frozen foods are broccoli, brussel sprouts and cauliflower. These crops are classed as cool-season crops requiring, for optimum growth, low mean temperatures (60° to 70°F.). When mature, these crops will withstand moderate freezing temperatures for short periods. Consequently, production is usually concentrated in areas with a long open fall season, such as coastal regions. Two of the most favourable are Prince Edward Island and the lower mainland of British Columbia.

D. B. S. statistics for cole crops grown for processing (freezing), show detailed production figures for British Columbia, with all other provinces grouped together. However, from figures provided by regional D. B. S. offices and a knowledge of the trade, it can be stated that at least 90 percent of the production shown for "other provinces" takes place in the Atlantic Region, particularly Prince Edward Island, with a lesser acreage in New Brunswick.

A review of acreage and tonnage statistics provides a clear picture of the relative importance of these crops to the Atlantic Region.

a. Broccoli

The average acreage of this crop grown for processing in Canada

a. Broccoli - continued

for the years 1966 and 1967 was 665 acres. The "other provinces", primarily Atlantic, produced 450 acres or 67 percent of the total acreage. Due to the lower average yields in the Atlantic Provinces, the total packed volume amounted to 53 percent of Canada's total.

b. Brussel Sprouts

The average acreage for this crop grown for processing in Canada for the years 1966 and 1967 was 465 acres. The "other provinces", primarily Atlantic, produced 380 acres or 82 percent of the total acreage. The total packed volume in the Atlantic Provinces amounted to 77 percent of Canada's total.

c. Cauliflower

The average acreage of this crop grown for processing in Canada for the years 1966 and 1967 was 360 acres. The "other provinces", primarily Atlantic, produced 285 acres or 79 percent of the total acreage. The total packed volume in the Atlantic Provinces also amounted to 79 percent of Canada's total.

2. Development Potential

Allowing for an extremely limited acreage of these crops, which is grown for processing in Ontario, it can be stated that on the average

2. Development Potential - continued

the Atlantic Provinces are now growing 75 percent of Canada's total acreage of these crops. If the total acreage of these three crops now produced in British Columbia were to be produced in the Atlantic Provinces, the total additional acreage would amount to only 375 acres. However, this is not a practical consideration as the economics of transportation, as well as established trade channels, result in the Western Provinces being supplied from British Columbia, with the Atlantic Provinces supplying the Eastern Provinces.

The export market for these three crops, when processed by freezing, is very limited. Entry into the United States is not feasible due to high import tariffs. Although there is a substantial market in the United Kingdom and Europe, these markets are supplied by local production due to substantially lower production costs.

Increases in production for the domestic market will be due, primarily, to population growth. As all plants presently geared for production of these crops are operating at less than full capacity, there would appear to be limited opportunity for economically increasing production capacity as market potential is limited.

TABLE 48

BROCCOLI PRODUCTION (for processing)

	British Columbia		Other		Total Canada	
	1966	1967	1966	1967	1966	1967
Acres planted under contract:	220	260	530	420	750	680
Acres not harvested for processing:	30	20	30	20	60	40
Net acres:	190	240	500	400	690	640
Tons processed from above:	560	700	720	730	1280	1430
Pack yield /acre in tons:	2.94	2.91	1.44	1.82	-	-
% of total pack:	43.7	49	56.3	51	-	-
% of total acreage:	27.5	37.5	72.5	62.5	-	-

Source: D.B.S., Canneries & Bakeries, Food & Beverage Processing, IND-SB-1 (79)

TABLE 49

BRUSSEL SPROUTS
(For Processing)

	British Columbia		Other		Total Canada	
	1966	1967	1966	1967	1966	1967
Acres planed under contract:	100	130	450	490	550	620
Acres not harvested for processing:	30	30	50	130	80	160
Net acres:	70	100	400	360	470	460
Tons processed from above:	400	330	1480	1020	1880	1350
Pack yield /acre in tons:	5.7	3.3	3.7	2.8	-	-
% of total pack:	21.3	24.4	78.7	75.6	-	-
% of total acreage:	14.9	21.7	85.1	78.3	-	-

Source: D.B.S., Canneries & Bakeries, Food & Beverage Processing, IND-SB-1 (79)

TABLE 50

CAULIFLOWER PRODUCTION
(For processing)

	British Columbia		Other		Total Canada	
	1966	1967	1966	1967	1966	1967
Acres planted under contract:	100	80	300	300	400	380
Acres not harvested for processing:	20	10	20	10	40	20
Net Acres:	80	70	280	290	360	360
Tons processed from above:	320	240	770	1430	1090	1670
Pack yield /acre in tons:	4	3.4	2.7	4.9	-	-
% of total pack	30	14.3	70	85.7	-	-
% of total acreage:	22.2	19.4	77.8	80.6	-	-

Source: D.B.S. Canneries & Bakeries, Food & Beverage Processing, IND-SB-1 (79)

ASPARAGUS

Potential for Growing and Canning in the Atlantic Provinces

The production of asparagus for processing should be considered as an additional crop for certain areas within the Atlantic Region. There is a substantial market in Canada for canned asparagus and sales of Canadian canned asparagus to the U.K. in 1968 returned a higher dollar value than the sales of canned apple products to the same market. Raw material imported from the U.S. is being processed in Canada for domestic consumption and for export at an increasing rate.

Total raw material sales of domestically produced asparagus to the processing industry amounted to 3.4 million pounds in 1966, with an average value of $0.22 per pound. Raw material imports for processing have increased from a level of 1.4 million pounds in 1962 to 4 million pounds in 1966 and indications are that imports for processing have been higher the past two years.

There is obviously a need for much greater production in Canada to supply the requirements of the processing industry. To replace imports of raw material totally would require approximately 2600 acres of new production based on a yield of 1500 pounds per acre. The value of these raw material imports amounted to 1.2 million dollars in 1966.

The Canadian grower is protected against imports of raw asparagus by a 3-1/2 cent per pound duty, a 7-1/2% exchange rate plus substantial transportation charges from point of origin in the U. S. Even with this level of protection, there has been a reluctance on the part of the growers to become involved with this crop. The reasons are twofold. A time lag of three years between planting and first harvest, including a heavy investment on the part of the grower and substantial hand labour requirements for harvesting.

Recent developments in mechanical harvesting systems have changed the production outlook and economics of this crop. At least two commercial manufacturers now offer mechanical harvesters and further refinements will no doubt be incorporated into these and other machines, before new plantings come into production.

Although the yield potential in the Maritimes may be at a somewhat lower level than major U. S. areas, nevertheless there is a price differential in favour of the Canadian grower to offset the yield factor. The inherent potential from a processing standpoint would suggest that a thorough investigation should be conducted on the possibility of development of this crop from an agricultural standpoint

TABLE 51 LIST OF CANADIAN PROCESSORS WHO PACKED ASPARAGUS IN 1967

QUEBEC	Location
Snyder & Sons Limited	Ste-Geneviéve-de-Pierrefonds
ONTARIO	
Canadian Canners Limited	Dresden
Culverhouse Canning Limited	Vineland Station
Niagara Food Products Ltd., The	Stoney Creek
Smart Bros. Limited	Collingwood
Stafford Foods Limited	Hamilton
BRITISH COLUMBIA	
Berryland Canning Co.	Haney
Canadian Canners Limited	Penticton
Fraser Valley Frosted Foods Limited	Chilliwack
Milne Cannery, The	West Summerland
Royal City Foods Limited	New Westminster
Snowcrest Packers Ltd.	Abbotsford
York Farms Ltd.	Sardis

TABLE 52 SALES OF ASPARAGUS TO PROCESSORS (in lbs.)

YEAR	DOMESTIC	IMPORTED	TOTAL
1962	4,349,000	1,354,000	5,703,000
1963	3,830,000	1,837,000	5,667,000
1964	4,028,000	3,252,000	7,280,000
1965	4,161,000	3,455,000	7,627,000
1966	3,429,000	4,062,000	7,491,000
1967	3,378,000	-	-

Source: Crop & Seasonal Price Summary, Markets Information Section, Production and Marketing Branch, Canada Department of Agriculture.

TABLE 53 PACK OF PROCESSED ASPARAGUS IN CANADA AND SALES TO PROCESSORS.

	YEAR	CASES PACKED	NET WEIGHT
CANNED:	1966	368,000	7,151,000 lbs.
	1967	387,012	7,559,000 lbs.
	1968	508,139	9,783,511 lbs.
FROZEN:	1966		734,000 lbs.
	1967		894,295 lbs.
	1968		n/a

Source: Crop & Seasonal Price Summary, Markets Information Section, Production & Marketing Branch, Canada Department of Agriculture.

TABLE 54

DOMESTIC PACK, IMPORTS, AND EXPORTS OF PROCESSED ASPARAGUS, 1962 - 1968

('000 pounds)

	1962	1963	1964	1965	1966	1967	1968
CANNED							
Domestic	5583	5323	7017	8285	7151	7559	9783
Import	864	744	808	483	456	496	593
Export	-	-	-	-	-	-	1442
FROZEN							
Domestic	559	431	729	590	734	894	-[1]
Import	-	102	53	33	16	-	-

[1] Confidential to meet secrecy requirements of the Statistics Act.

Source: Ibid

TABLE 55

IMPORTS OF ASPARAGUS BY COUNTRY OF ORIGIN
1967 - 1968

	Pounds	
	1967	1968
France	14,556	16,162
Spain	9,190	12,231
Japan	8,073	375
Taiwan	163,264	255,498
Australia	9,000	8,478
Peru	17,589	4,500
United States	272,135	295,792
Tunisia	1,911	-
TOTAL	495,718	593,026

Source: Imports by Commodities, No. 65-007, D.B.S., Ottawa.

PRODUCTION AND MARKETING OF RUTABAGA (TURNIPS) IN THE ATLANTIC PROVINCES

1. Historical Background of Exports

The three principal turnip exporting regions in Canada are Ontario, P.E.I. and Quebec.

Although total exports of turnips from Canada have declined during the period 1954 - 68, certain Canadian areas have increased exports, while the decline in exports from P.E.I. has been very marked.

Total turnip exports from Canada declined from a figure of 2,353,885 bushels in 1954-55 to 1,578,704 bushels in 1966-67. During the 1967-68 season, exports topped the 2 million bushel mark due to a substantial increase in exports from Ontario. The export of turnips from P.E.I. has declined from a high of 650,333 bushels in 1952-53 to 124,512 bushels or 6 percent of total Canadian exports in 1967-68. Production problems at the farm level have contributed to this decline, but the main factor has been a lack of marketing sophistication.

The major export market is to the North-eastern States, particularly New England. This market demands a quality product. Although P.E.I. can produce a turnip equal to and considered by many to be superior in eating quality, modern merchandising methods must be used to regain a position in the market-place.

2. Present Conditions in the Industry

The consumer now demands a turnip with a smooth, thin skin, graded to size, washed and waxed. Canada's other producing regions have fulfilled these market requirements and have, therefore, secured the major share of the export market. Graded, washed and waxed turnips bring premium prices which growers must secure to meet the ever-increasing costs of production. If P. E. I. is to regain the traditional markets which they have had in the past, major efforts must be directed toward solving the present marketing problems.

3. The Situation in Prince Edward Island

The only Atlantic Province which exports turnips in any quantity is P. E. I. Therefore, we propose to limit our study to conditions prevailing in P. E. I. in as much as any producing region in the Atlantic Region will have to meet similar conditions. Although production of turnips in P. E. I. has declined substantially, it is nevertheless a crop which can be profitable to the grower and for which there is a steady but not spectacular demand. The acreage devoted to turnips on individual farms in P. E. I. is relatively small and it is therefore not of sufficient importance to interest growers in applying the latest scientific findings with respect to agricultural practices.

3. The Situation in Prince Edward Island - continued

By contrast, turnip production in competing areas is usually handled by large commercial growers who devote the necessary time, capital and management know-how to ensure success.

Produce buyers and shippers have done little to improve the image of P.E.I. turnips in the market-place. Most exports have not been graded, washed or waxed which, as has been pointed out previously, is what the consuming public now demands.

Modern packaging as employed in competitive areas has been little used. Too great a volume of produce of marginal quality has been exported. Mediocre storage facilities have resulted in declining quality throughout the winter months and this has virtually eliminated any possibility of late spring and early summer sales when prices are traditionally at peak levels.

The present seasonal trend of marketing has resulted in the major part of the crop being sold at that period of the year offering the lowest prices. Lack of a strong grower organization has left the discretionary powers of price establishment in the hands of a few shippers, resulting in a situation similar to that found in the fresh potato industry.

4. Recommendations

a. Larger Acreages

Specialization is essential to ensure low cost production per unit. Growers interested in the production of turnips must approach the task from the standpoint of minimizing costs. Therefore, fewer growers with much larger acreages per farm are required. Growers would then have the necessary financial inducement to carry out modern production programmes to ensure a high quality product.

b. Grower Organization

To adequately service the export and domestic markets in nearby provinces, a well managed, centralized grading and shipping organization is essential. To ensure a continuous supply of uniformly high quality product, a rigid quality control inspection programme is needed from field to eventual market. Based on results secured in other areas on a wide range of farm products, it would appear that a grower association or co-operative should be formed to handle all functions of processing and marketing. Such an organization would establish a facility for storage, grading, washing, waxing, packaging and eventual marketing of all production. Only in this manner can the former markets supplied by P.E.I. products be recaptured and new outlets for the product of Atlantic Canada be secured.

b. Grower Organization - continued

A modern storage facility would appear to be essential to level out the peak seasonal marketing trends which have plagued the industry. However, since a large volume will be marketed during the Fall directly from the field, followed by common storage stocks held by growers during the early winter months, such a storage would be only used for holding high quality stocks to be marketed during the spring and early summer months, when prices have traditionally been firmer.

Too much stress cannot be placed on adherence to maximum quality standards. Only in this way can lost markets be recaptured. It should be the eventual aim of such a marketing organization to foster and develop a strong quality image with the hope of securing a premium price over competition similar to the situation existing in the P.E.I. potato industry.

c. Marketing

Even though improved practices are followed in the growing, processing and packaging of this product, ready acceptance in the market will not automatically follow. It is much more difficult to regain a lost market than to develop a market initially.

c. Marketing - continued

Competition from other areas, particularly Ontario, must be met with a strong marketing programme based on a quality image. These factors will not be easy to overcome nor will it be accomplished in a brief period of time.

Ontario has gained a very strong position in the U.S. market. To indicate current developments that must be faced, we include herewith an abstract from a press release regarding organization of an Ontario Turnip Council. This is the type of competition that the Atlantic Region producers must meet if they are to regain a larger share of the U.S. market:

"As a result of recent meetings of the Rutabaga Industry in Ontario, growers, shippers and associates have banded together to organize the Ontario Turnip Council. Incorporation is now underway under the Companies Act.

Under the Constitution and By-Laws as accepted by members of the Industry, the purposes of the Council are as follows:

- To conduct advertising, promotion, publicity and any other co-operative action to expand and benefit the industry, in domestic and export markets.

c. Marketing - continued

- To collect and disseminate such statistical information as may be helpful in the marketing of Ontario turnips.
- To encourage and aid research on turnips and turnip products that would result in an improved product and improved methods.
- To receive, acquire and hold grants, gifts, donations, levies, devises and bequests.
- To work closely with other Provincial, National and International organizations, towards the betterment of industry as a whole.

Signed agreements have now been received by the Secretary-Treasurer from shippers to represent approximately ninety percent of all the product marketed both for domestic and export. These agreements provide for a deduction of 2 cents per 50 pound weight package unit.

Source: "The Grower", February 1969.

TABLE 56 EXPORTS OF RUTABAGAS (TURNIPS) BY MAJOR CANADIAN EXPORTING REGIONS, 1962 - 1963 to 1967 - 1968.

Province	Destination	Kind	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68
PEI	USA	plain	235,597	244,499	225,658	54,224	142,327	122,792
	USA	waxed	8,947	10,330	2,090	-	-	-
	Other	plain	2,241	552	170	867	260	1,720
			246,785	255,381	227,918	55,091	142,587	124,512
ONTARIO	USA	plain	243,950	238,610	281,079	342,047	204,380	325,570
	USA	waxed	1,078,645	1,298,277	1,300,787	1,224,781	1,164,891	1,386,990
	Other	plain	-	-	-	-	-	-
			1,322,595	1,536,887	1,581,946	1,567,422	1,369,271	1,712,650
OTHER PROVINCES:	USA	plain	12,970	17,968	87,932	50,800	65,321	92,250
	Other	plain	1,356	1,713	1,460	1,124	1,525	895
			14,326	19,681	89,392	51,924	66,846	93,145
CANADA:	USA	plain	492,517	501,077	594,669	447,071	412,028	540,612
	USA	waxed	1,087,592	1,308,607	1,302,877	1,224,781	1,164,891	1,518,961
	Other	plain	3,597	2,265	1,710	2,585	1,785	2,705
			1,588,706	1,811,949	1,899,256	1,674,437	1,575,704	1,062,278

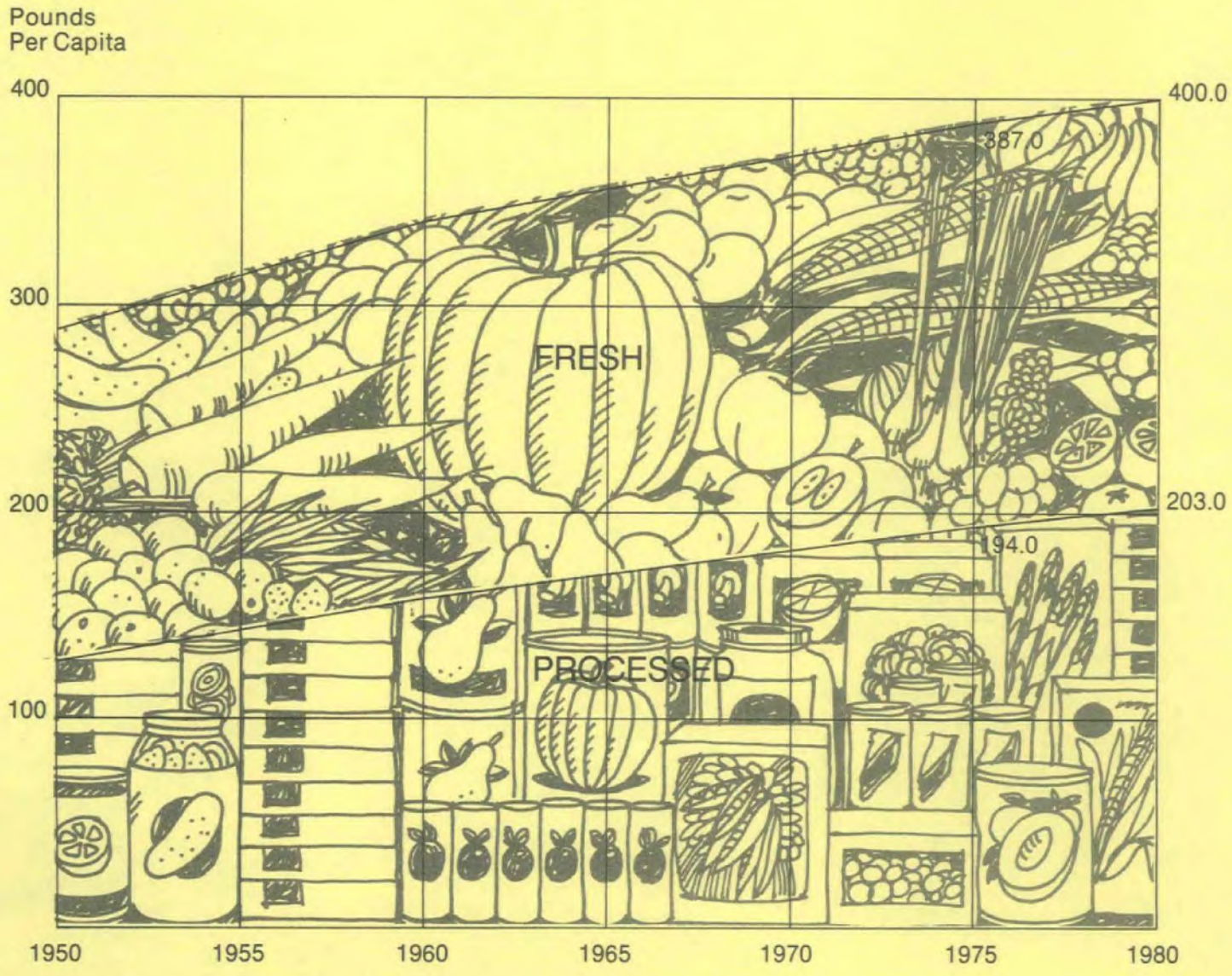
Source: Crop & Seasonal Price Summaries, Production & Marketing Branch, C.D.A., Ottawa.

Development study

Fruit and Vegetable Processing Industry

Atlantic Provinces

Volume 3 Appendices



VOLUME 3

APPENDICES

This volume contains statistical, background and ancillary material which has been set aside from the main body of the report in order to facilitate readability. Those unfamiliar with the fruit and vegetable processing industry are especially encouraged to read the background information presented herein.

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APPENDIX A

SIZE AND ECONOMIC IMPORTANCE OF THE CANADIAN FOOD MANUFACTURING INDUSTRY

Personal consumption expenditures for food amount to approximately 7 5 to 8 billion dollars per annum in Canada. This amount represents almost 22 percent of all personal expenditures for goods and services, making it by far the largest single category.[1] The economic significance of the food manufacturing and processing industry becomes clearer when it is compared with other manufacturing industries. Figure A-1 presents the relative size of a number of leading industries when measured by total number of employees and value added by manufacture.[2] 'Basic' industries such as transportation equipment, paper and non-metallic mineral products are actually overshadowed by the food manufacturing and processing industry.[3] Total employment in the food manufacturing industry is almost double that in paper and allied industries and over four times as great as that in the non-metallic mineral products industry.

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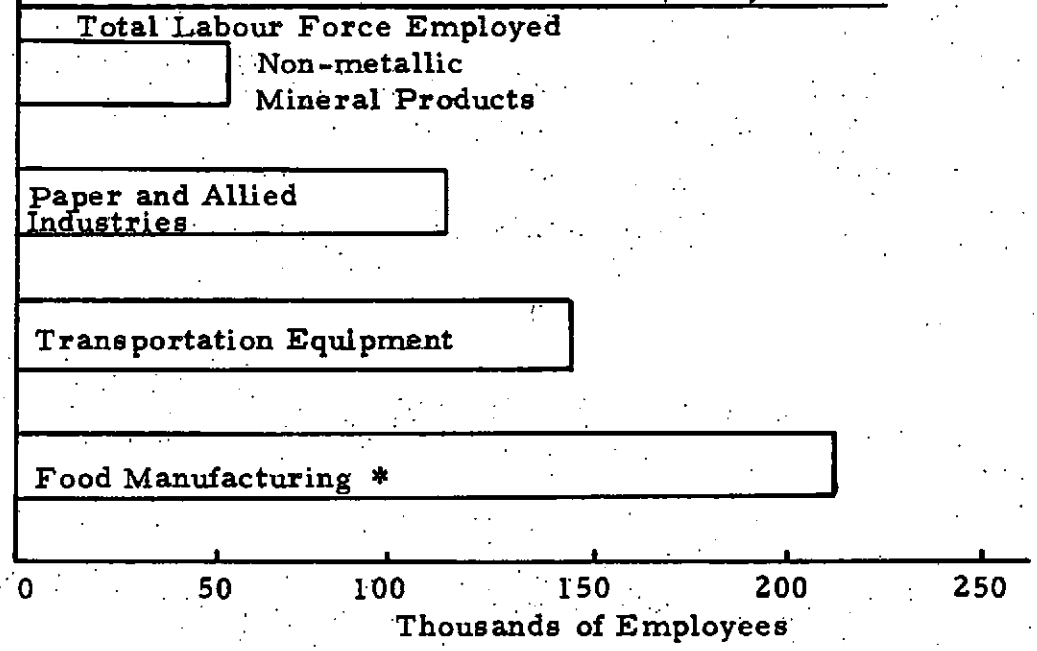
1 Canada Year Book, 1968, Table 8, p. 1067. Excludes alcholic beverages. Other classifications of personal consumption expenditures and their percentage of the total in 1965 were as follows: Tobacco and alcoholic beverages, 6 4%; Clothing and personal furnishings, 9.0%; Shelter, 15%; Household operation, 12%; Transportation, 12%; Personal & medical care and death expenses, 9%.

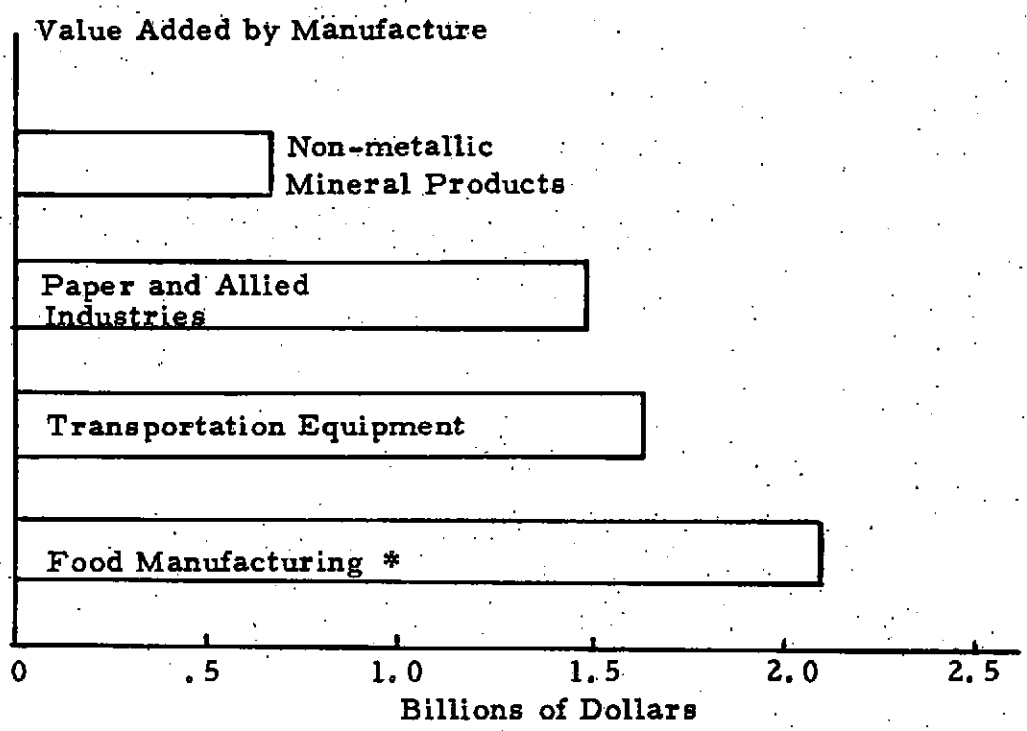
2 The statistic "value added by manufacture" is, for most purposes, the best available measure for comparing the relative economic importance of manufacturing among industries.

3 Includes all food & beverage industries with the exception of feed mills

FIGURE A-1

EMPLOYMENT AND VALUE ADDED FOR SELECTED MANUFACTURING INDUSTRIES IN CANADA, 1966.





* Includes all food and beverage industries with the exception of feed mills.

Source: Preliminary Publication, 1966 Annual Census of Manufacturers, D.B.S., Ottawa.

By way of comparison, "value added" in the food manufacturing industry in 1966 was 31 percent greater than in transportation equipment, 40 percent greater than in paper and allied industries and more than three times that in non-metallic mineral products. By these measures, the food manufacturing industry is the largest single segment of Canadian industry.

The food manufacturing industry has experienced substantial growth in recent years. While a portion of this growth is attributed to increases in population and growing urbanization, a fundamental change has occurred in the buying habits and tastes of consumers. These changes are related primarily to rising per capita income.

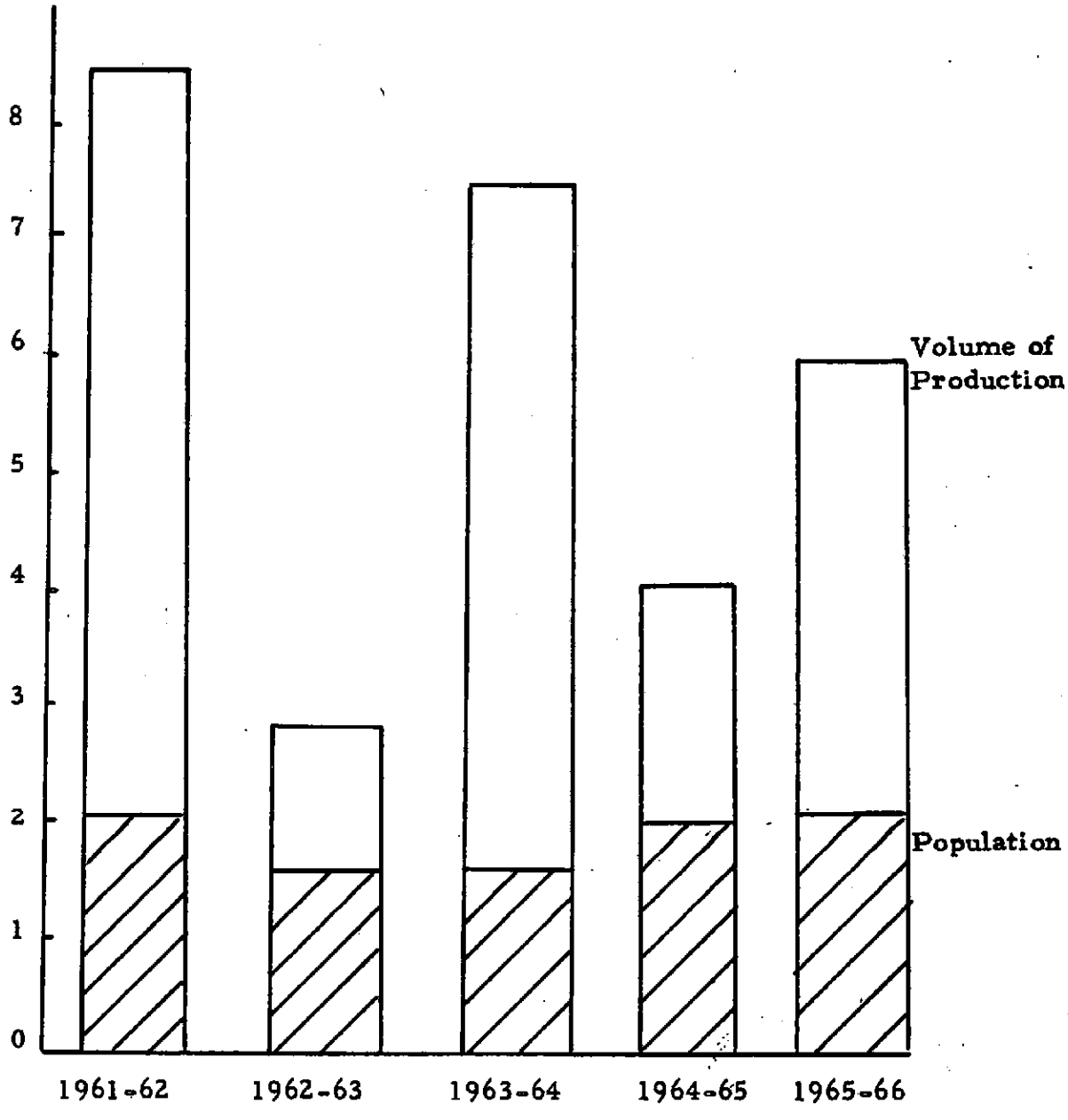
Today manufacturers undertake a substantial part of the preparation of food with the result that many products may be served with only a minimum of preparation. Figure A-2 denotes the relative increase in the volume of manufacturing production in the food and beverage industry as compared with the increase in population.[4]

In all of the years examined, the increase in volume of production was substantially larger than the increase in population.

[4] The percentage increases in volume of production shown in Figure A-2 are based on the index of production for food and beverage products. This index is based upon the 1948 standard industrial classification and is designed to represent net production.

FIGURE A-2

PERCENTAGE INCREASE IN VOLUME OF PRODUCTION IN THE FOOD INDUSTRY AND PERCENTAGE INCREASE IN POPULATION, CANADA, 1961 to 1966



Source: Canada Year Book, 1966.

APPENDIX B

SIZE AND IMPORTANCE OF THE FRUIT AND VEGETABLE PROCESSING INDUSTRY IN CANADA

The relative importance, in terms of manufacturing value added and employment for the various food manufacturing industries is indicated by Figure B-1. The fruit and vegetable processing industry ranked fifth in value added by manufacturing, behind the beverage, meat, miscellaneous, bakery and dairy industries in that order. In terms of total employment, the fruit and vegetable processing industry ranked fifth behind the bakery, meat, dairy and beverage industries.

Tables B-1 and B-2 illustrate industry growth patterns as indicated by dollar value of shipments and market share for selected food industries.

The fruit and vegetable processing industry although not one of the larger of the food manufacturing industries, showed a yearly rate of increase of 5 percent in the value of manufactured shipments from 1961 to 1965.

This 5 percent rate of increase in the fruit and vegetable processing industry was substantially larger than that of the meat, beverage and bakery industry, all of which rank higher in value added by manufacture and in employment. In fact, the beverage and bakery industries actually showed a decline in the value of manufactured shipments from 1961 to 1965. It is interesting to note that those industries which rank highest in

value added and employment were the ones that showed a low or negative rate of increase in value of shipments. With the exception of the category "other food manufacturers", the fruit and vegetable processing industry was the largest segment of the food manufacturing industry to show a substantial gain in value of shipments in the four year period under examination.[1]

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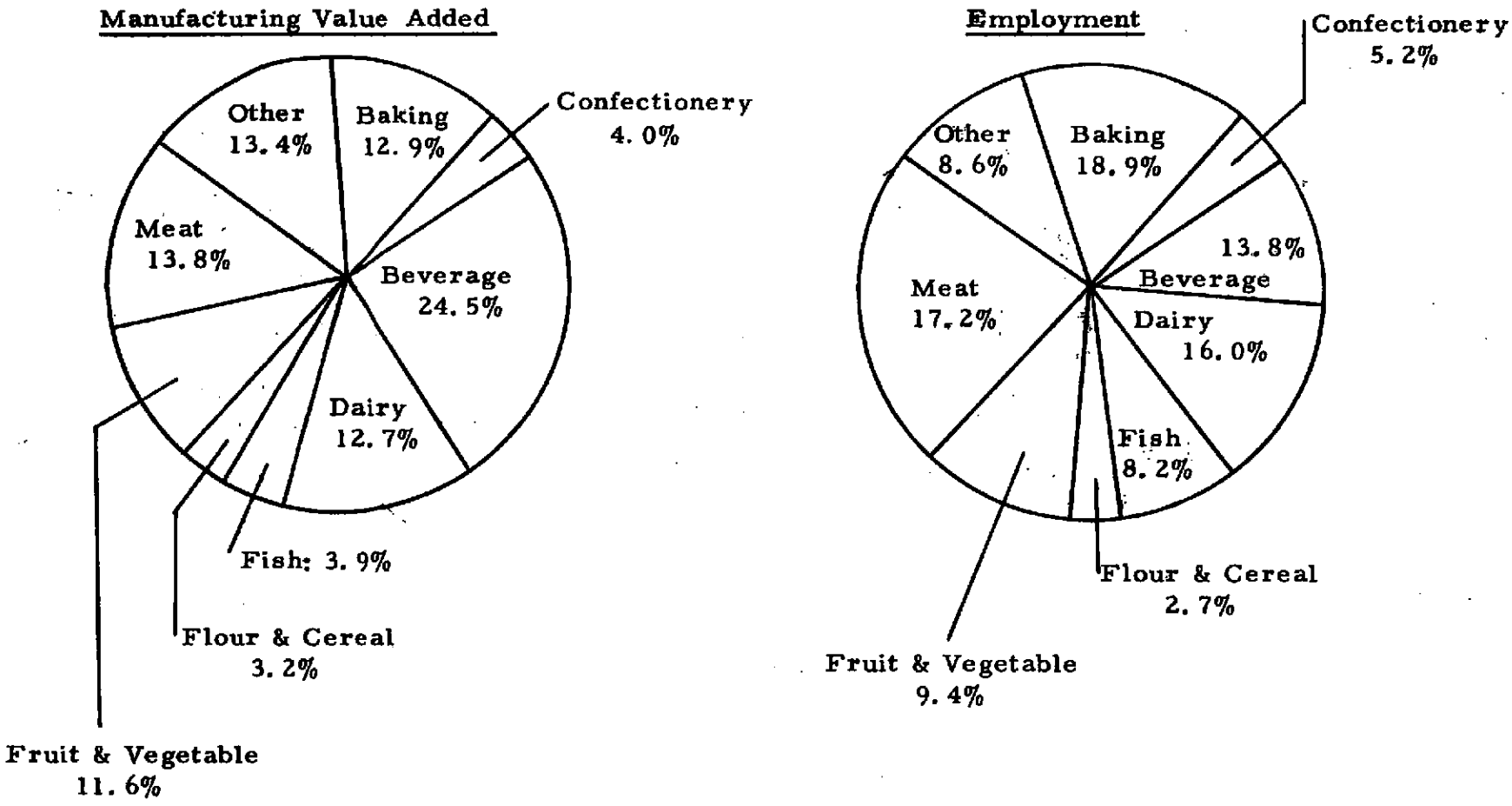
1 Other food manufacturers gained 5.9% and meat packers gained 2.0%.

FIGURE B-1

DISTRIBUTION OF VALUE ADDED AND EMPLOYMENT
BY FOOD INDUSTRY GROUP, CANADA, 1965.



Source: Food and Beverage Industry, Annual Census of Manufacturers, 1965, D.B.S., Ottawa.

TABLE B-1 INDUSTRY GROWTH PATTERNS BY DOLLAR VALUE OF FACTORY SHIPMENTS FOR SELECTED FOOD INDUSTRIES, CANADA.[a.]

	1961	1963	1965	1968(Est)	1971(Est)
	(Thousands of dollars)				
Bakery Industry:	456,782	492,951	546,700	614,000	682,000
Confectionery Industry:	140,500	161,900	187,600	223,000	258,000
Beverage Industry:	619,948	689,200	775,600	892,000	1,008,000
Dairy Industry:	891,736	965,196	1,061,500	1,189,000	1,316,000
Fish Processing Industry:	182,600	214,000	269,300	334,000	399,000
Flour and Cereals Industry:	260,636	278,600	292,200	316,000	340,000
Fruit & Vegetable Processing Industry:	328,100	379,000	435,700	517,000	598,000
Meat Packing Industry:	1,262,200	1,372,200	1,631,300	1,908,000	2,185,000
Other Food Manufacturers & Processors; incl. tea, coffee, extracts, spices, honey, macaroni, nuts and sugar refineries:	623,334	821,527	835,600	994,000	1,152,000
TOTALS:	4,765,836	5,374,574	6,035,521	6,987,000	7,938,000

a. 1968 and 1971 estimates are projections based on 1961, 1963 and 1965 figures.

Source: Canadian Food Industries, July 1968, p. 11.

TABLE B-2 INDUSTRY GROWTH PATTERNS BY PERCENTAGE SHARE OF MARKET[a.] FOR SELECTED FOOD INDUSTRIES,[b.] CANADA.

	1961	1963	1965	1968(Est)	1971(Est)	Percentage Change 1961-65
Baking Industry:	9.58	9.17	9.05	8.78	8.59	-5.5
Confectionery Industry:	2.94	3.01	3.10	3.19	3.25	+5.5
Beverage Industry:	13.00	12.82	12.85	12.76	12.69	-1.1
Dairy Industry:	18.71	17.95	17.58	17.01	16.57	-6.4
Fish Processing Industry:	3.83	3.98	4.46	4.78	5.02	+16.4
Flour & Cereals Industry:	5.46	5.18	4.84	4.52	4.28	-12.3
Fruit & Vegetable Processing Industry:	6.88	7.05	7.21	7.39	7.53	+5.0
Meat Packing Industry:	26.48	25.53	27.02	27.30	27.52	+2.0
Other Food Manufacturers & Processors, incl. tea, coffee, extracts, spices, honey, macaroni, nuts & sugar refineries:	13.07	15.28	13.84	14.22	14.51	+5.9

a. Based on value of shipments.

b. Excludes Feed Manufacturers, S.I.C. Classification 123.

Source: Canadian Food Industries, July 1968, p. 12.

APPENDIX C

SIZE DISTRIBUTION AND SCALE OF ENTERPRISE IN THE CANADIAN FRUIT AND VEGETABLE PROCESSING INDUSTRY

Size Distribution

While a considerable size range exists between the smallest and largest fruit and vegetable processing plants, most plants in the industry are quite small. In 1965, there were 225 plants with fewer than 50 employees. These plants, however, accounted for only 14.2 percent of total manufacturing value added by the industry (Figure C-1). Plants having from 50 to 199 employees accounted for 42.1 percent of value added in 1961 but only 35.3 percent in 1965, and plants with over 200 employees increased their share of total manufacturing value added by 8 percent to 50.3 percent in 1965. Therefore, even though much fruit and vegetable manufacturing occurs in plants which are not large by many other industries' standards, large plants account for a significant share of fruit and vegetable production.[1]

Plant and Company Concentration

In some industries, efficient production requires relatively large plants. This limits the number of plants which can be maintained effectively and the number of potential entrants is materially reduced.

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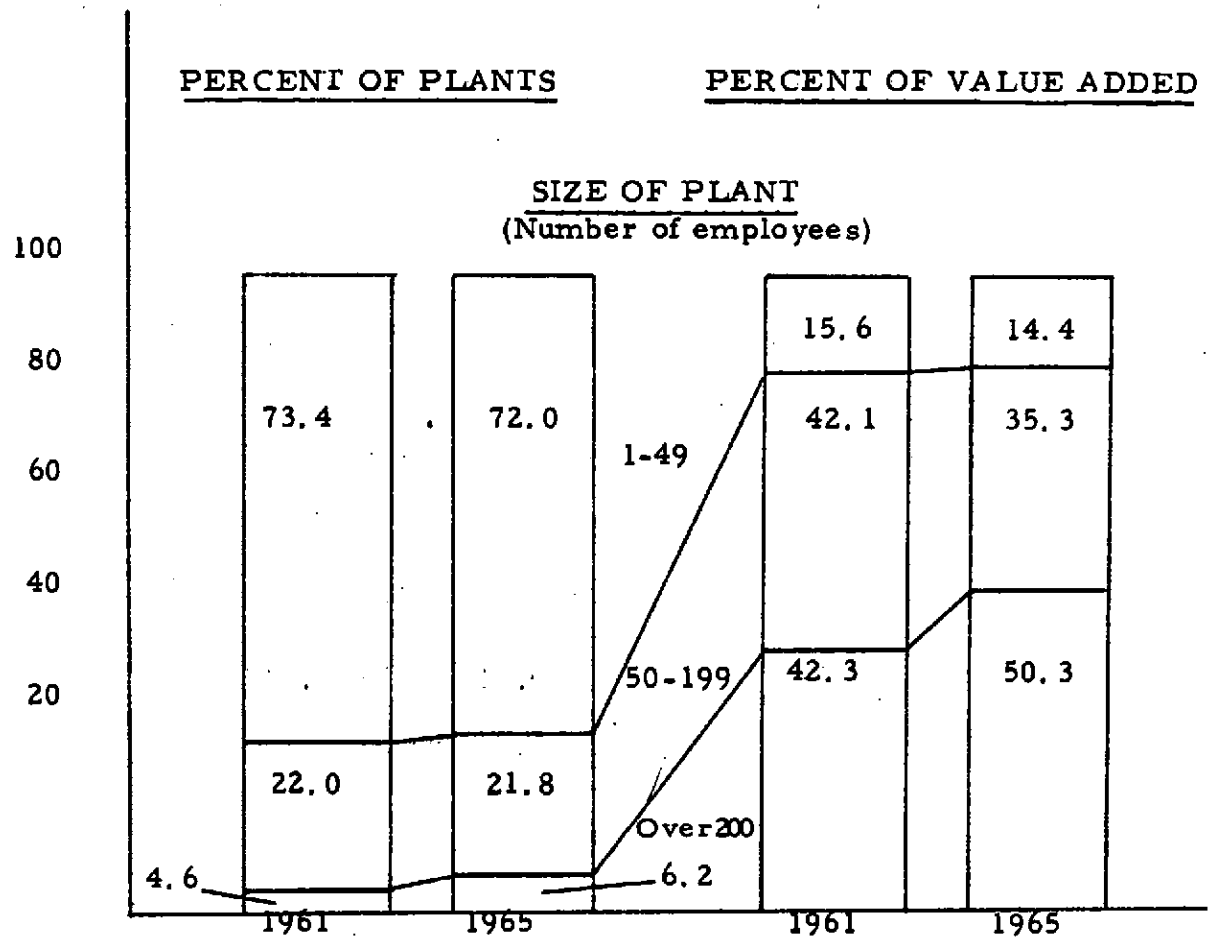
[1] In 1965, four plants with 500 employees or more accounted for just over 50% of value added by all plants with 200 employees or over, and 28% of total industry value added.

FIGURE C-1 SIZE DISTRIBUTION OF FRUIT AND VEGETABLE PROCESSING PLANTS, 1961 and 1965, CANADA.



Source: Fruit and Vegetable Canners & Preservers, 32-218, D.B.S., Ottawa.

As a practical matter, such industries are few in number and the fruit and vegetable industry is certainly not such an industry. Multi-plant operations in the fruit and vegetable industry cause company concentration to be higher than plant concentration. Since large companies operate several plants, the assumption is that large plants are not necessary for efficient production, since large companies would rationally bring a single plant to efficient size before adding another. This is true of the fruit and vegetable processing industry where the large companies are usually multi-plant operations.

Minimum Efficient Size Plants for Fruit & Vegetable Processing

In the past two decades, considerable enquiry has taken place, especially in the U.S., into economics of scale, i.e. the shape of the long run cost curves in various food processing industries. In general, the literature shows that the average unit costs of production decline as plant size is increased to some level and then remains constant or increases for larger plants.[2]

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2 The Structure of Food Manufacturing, Technical Study No. 8, National Commission on Food Marketing, June 1966, U.S.D.A.

The point or range of plant size where unit production costs are lowest is designated "least cost". The smallest size plants within the range are defined as "minimum optional size plants", meaning the smallest size plant capable of achieving least-cost production, including normal competitive returns to labour and capital. Thus, it estimates the lower limit of efficient size and not an upper limit. This lower limit has increased historically as new technology has changed the productivity of labour and machines.

Three techniques are generally employed to estimate the level of minimum efficient size plants:

1) the survivor technique;

2) the lowest labour costs, and

3) the engineering approach.

These three techniques sometimes provide widely differing results but, taken together, they provide the only available information on economies of sale in fruit and vegetable processing. The survivor technique is based on the hypothesis that those sizes of plants which are most efficient will survive. This technique has the advantage that it is based on market results. It is a crude estimate, at best, because plants of a certain size designated as efficient may survive for many

reasons other than their productive efficiency.[3] Table C-1 shows the change in size distribution as indicated by the number of establishments having value of shipments within certain limits. Based on these results, the minimum efficient size plant would be around $200,000 in sales.

Another approach using labour cost data can be used to estimate minimum efficient plant size. Here the ratio of wage payments to value of shipments for employment size classes of establishments is used as a proxy of economies of scale. This measure has the advantage that it is based on experienced costs of operating plants. Aside from material costs, labour is the largest input in fruit and vegetable processing. Labour cost variations by size of plant are shown for fruit and vegetable processors in Table C-2. These data show that plants with the lowest labour costs as a percent of sales were in the 1,000,000 dollar sales or over category. In 1964, three establishments with sales over 5 million dollars showed wages as of percent of sales equal to 8.8. This indicates that with respect to labour costs the largest plants have a relative advantage. However, smaller plants can often offset their somewhat higher labour

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3 Superior management ability, nearness to local markets, lower profit requirements, etc. may compensate for inefficient plant size.

TABLE C-1 CHANGE IN SIZE DISTRIBUTION AS INDICATED BY NUMBER OF ESTABLISHMENTS - CANADA.

SIZE GROUP BY VALUE OF SHIPMENTS	1961	1965	Change in Number of Establishments
under $ 10,000	24	13	-
$ 10,000 - $ 24,999	24	19	-
$ 25,000 - $ 49,999	31	24	-
$ 50,000 - $ 99,999	38	26	-
$100,000 - $ 199,999	40	27	-
$200,000 - $ 499,999	69	73	+
$500,000 - over	109	131	+
TOTAL:	335	313	

Source: Fruit and Vegetable Canners and Preservers, No. 32-218, D.B.S., Ottawa.

costs through their locational advantage, by giving retail or wholesale customers special services, or by being willing to put in longer hours and accept lower salaries or returns on their investment.

Engineering and accounting data can be used to develop cost curves for the fruit and vegetable processing industry. Usually, the level of technology, wage rates, costs of ingredients, and the rate of plant utilization are held constant among sizes of plants considered, which has the advantage of focusing on the relation between plant size and unit costs of production. But other variables are often not the same for small and large plants. The engineering approach to measuring minimum efficient size plants has important limitations, as do the approaches previously mentioned.

At best, they may indicate the general size range for plants in the industry; however, every plant is a particular exception to the general rule. Engineering studies do not usually treat the problem of multiple products, varying managerial competence, time for small plants to grow up, demand variability, variable input prices and quantities, optimum output mix, and variable output prices as well as quality.[4, 5]

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[4] Studies conducted in the U.S. giving engineering estimates for the average value of shipment for minimum efficient size plants as $6.9-13.7 million for canned fruits & vegetables, and 4.8-32.0 million dollars for frozen fruits and vegetables.

[5] The Structure of Food Manufacturing, Technical Study No. 8, National Commission of Food Marketing, June 1966, U.S.D.A.

Marketing Constraints on Efficient Plant Size

Marketing aspects have an overwhelming influence on the optimum overall plant size. The size of the market, the individual product markets in which the plant's products will be competing, distribution costs and size and concentration of competitors each affect the minimum efficient plant size for a particular location. From a production standpoint, the minimum efficient plant size could be larger than the market for a product or products, or represent such a large part of the market that establishing a plant would require forcing competitors off the market completely. Distribution charges could be so large that it would be impossible to supply all the market from one plant of efficient size, or possibly not a sufficient quantity of raw material would be available in a single location to supply one large plant. Such marketing constraints must be considered in any investigation of optimum plant size for a specific area.

TABLE C-2 LABOUR COSTS AS A PERCENT OF SALES BY EMPLOYMENT SIZE CLASS OF PLANT, 1965 - CANADA.

SIZE OF PLANT	Value of Shipments per Plant	Wages and Salaries	Wages as a percent of value of shipments
	$('000)	$('000)	
under $10,000	471	36	7.64[1]
$10,000 - $24,999	1,362	169	12.4
$25,000 - $49,999	2,636	310	11.8
$50,000 - $99,999	10,763	1,385	12.9
$100,000 - $199,999	21,790	2,554	11.8
$200,000 - $499,999	52,653	6,146	11.7
$500,000 - $999,999	46,753	5,197	11.1
$1,000,000 and over	299,324	31,482	10.5

1 Not significant as owners and salaried employees contribute services which are not counted as labour wages.

Source: Fruit and Vegetable Canners and Preservers, No. 32-218, D. B. S., Ottawa.

APPENDIX D

TRENDS IN OUTPUT OF THE FRUIT AND VEGETABLE PROCESSING INDUSTRY IN CANADA

The total output of the fruit and vegetable canning and preserving industry has increased substantially in total dollar value of shipments and in quantity of output since 1950. The actual selling value and quantity of goods produced is given in Tables D-1 and D-2 for major product groupings. These food product groupings accounted for 75 percent of the total factory selling value of all products produced by the fruit and vegetable processing industry in 1965. As a percent of the 1950-1952 average, the 1965 pack of canned fruits represented a volume increase of 20 percent; that of canned vegetables an increase of 50 percent and that of frozen fruits and vegetables an increase of over 13 times the 1950-1952 average.[1] The growth in canned vegetables has been reasonably steady since 1960, whereas canned fruit output has been very irregular over the entire period.

The most phenominal rate of increase in growth has been in the production of frozen fruits and vegetables, where the average annual rate of increase in output has been 18.2 percent since 1960. As a percentage of

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[1] Percentage increases over the 1950-1952 average for the other product groups are: jams, jellies and marmalades, 14%; canned soups, all kinds, 60%; catsups, 230%; infants foods, canned only, 240%; tomato juice, 180%; pickles, relishes and sauces, 310%.

total dollar value of factory shipments, canned fruits represented 8.8 percent in 1957 and 6.0 percent in 1965; canned vegetables represented 23.3 percent in 1957 and 21.2 percent in 1965; frozen fruits and vegetables represented 3.3 percent in 1957 and 7.1 percent in 1965. The largest and fastest growing segments of the fruit and vegetable industry are: canned vegetables, frozen fruits and vegetables, pickles, relishes and sauces, canned soups, and infants' foods. It is interesting to note that the major product groups reported accounted for 80 percent of the total factory selling value of all products in 1957 and only 75 percent in 1965. This indicates a substantial gain since 1957 in the total factory selling value accounted for by miscellaneous, canned and bottled products. Some of these miscellaneous products, for which production figures are available, have had the following average yearly rates of increase in factory selling value: apple juice, 21.9 percent; tomato juice, 10.0 percent; fruit drinks, 24.0 percent; and pie fillings, 20.0 percent.[2] The average yearly percentage increase for juices combined was 20.0 percent.

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2 For the period 1961 to 1965.

The yearly increase in dollar value of output of frozen fruits and vegetables for this same period was 26.0 percent, making this sector of the industry by far the fastest growing.

The yearly rate of increase for frozen vegetables was 35.0 percent, and exceeded that of frozen fruits.

TABLE D-1

SELLING VALUE AT THE FACTORY OF SELECTED PRODUCTS*

1950 - 1965

Year	Canned fruits	Canned vegetables	Jams, jellies & marmalades.	Canned soups, all kinds.	Catsups	Infants' foods, canned only.	Tomato juice	Frozen fruits & vegetables not for re-processing.	Pickles, relishes and sauces.
				(thousands of dollars)					
1950:	18,546	39,273	16,647	26,670	4,531	6,786	5,234	3,543	8,467
1955:	22,175	57,047	18,532	35,795	7,162	12,943	10,978	7,566	11,453
1960:	23,807	70,109	22,071	52,004	10,404	20,306	14,627	14,875	22,695
1965:	26,236	92,130	23,538	54,890	15,399	25,945	19,717	30,872	34,012

* These figures do not include the output of domestic canners.

Source: Fruit and Vegetable Canners and Preservers, No. 32-218, D.B.S., Ottawa.

TABLE D-2

SHIPMENTS OF SELECTED PRODUCTS*

1950 - 1965

Year	Canned fruits	Canned vegetables	Jams, jellies, & marmalades.	Canned soups, all kinds.	Catsups	Infants' foods, canned only.	Tomato juice	Frozen fruits & vegetables not for reprocessing.	Pickles, relishes and sauces.
				(thousands of pounds)					
1950:	125,403	368,227	98,839	171,993	20,862	27,426	72,339	17,178	54,760
1955:	149,585	489,597	104,987	223,261	34,498	51,133	128,914	35,587	57,230
1960:	147,238	540,352	106,180	269,294	48,089	64,510	174,781	83,449	104,900
1965:	143,169	661,756	105,041	306,940	70,363	79,770	210,837	192,614	157,720

* These figures do not include the output of domestic canners.

Source: Fruit and Vegetable Canners and Preservers, No. 32-218, D.B.S., Ottawa.

APPENDIX E

CANADIAN PACK OF PROCESSED FRUITS AND VEGETABLES BY PROVINCE, 1966-67 Average

PRODUCT	CANADA	MARITIMES	QUEBEC	ONTARIO	PRAIRIES	B.C.
			('000 pounds)			
Canned fruits	157,061	30,133	7,644	76,188	-	43,001
Canned Veg.	631,813	21,357	196,170	347,228	28,354	38,702
Frozen Fruit	61,848	9,826	4,233	15,062	-	32,736
Frozen Vegetables	111,139	21,658	3,027	41,583	7,475	37,410

Source: Canned and Frozen Processed Foods, No. 32-212, D.B.S., Ottawa

APPENDIX F

LOCATIONAL DETERMINANTS IN FRUIT AND VEGETABLE PROCESSING

Introduction

Wage rates and the resulting labour costs, raw product prices, length of processing season and costs for transporting processed products to market vary widely among fruit and vegetable processing areas in Canada. These four factors represent inherent locational advantages or disadvantages between areas, accounting for important locational cost differences over which the individual firm has little or no control.[1] Other less important and sometimes related factors are quality of product, quality differences in workers, and multiproduct processing possibilities.

Rationalization of Fruit and Vegetable Processing in the Atlantic Region

There are a number of factors, as previously listed, which may have an effect on the relative profitability of processing in competing areas. If one could take all of these factors, knowing their value for each region and the proper weights to be assigned to each, and incor-

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1 Locational Effects of Selected Economic Factors in Fruit and Vegetable Processing, Michigan State University, Department of Agricultural Economics, Research Bulletin 19.

porate them into a mathematical program, one could theoretically arrive at a least-cost location for processing a particular item. Such a location, however, may not be at all practical as many factors tend to retard or prevent shifts in location of fruit and vegetable processing to least-cost locations. Among these are fixed investments in plants and facilities, the imperfect mobility of management and technical personnel, and difficulties in expanding production in what may be relatively small production areas. So, the analysis may boil down to a selection of the least-cost producing region from among areas already producing fruit and vegetable products.

It is beyond the scope of this study to determine the least-cost location by analytical methods for particular fruit and vegetable products of interest to processors and growers in the Atlantic Region. It is possible, however, to present generally the situation existing in the Atlantic Region and competing regions with respect to the major locational determinants. The following sections describe briefly the relative competitiveness of the Atlantic Region in the processing of fruits and vegetables in relation to the 4 major locational determinants.

Locational Determinants as they affect Processing in the Atlantic Region

i) Labour Costs

Many factors influence labour costs apart from the hourly wage rate paid. Although general wage rates are lower in the Atlantic Region than in other competing areas, processors in the area consider productivity to be at a lower level. Generally, the lower the wage rate, the higher the labour turnover. Both these factors have a substantial effect on labour costs in the Atlantic Region. A marked trend towards automation and advancing technologies in the food processing industry have made labour costs much less of a factor than previously considered. The major products packed in the Maritimes; potatoes, apple products and green peas, have low processing labour costs as compared to other products such as cole crops, spinach, peeled tomatoes, etc. Therefore, any advantage of low labour costs in the Region is not as pronounced as it might be if more labour intensive crops were processed.[2]

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2 A study conducted in the U.S. indicates the percentage of total manufacturing costs accounted for by labour costs: a) canning: spinach 24.8%, peeled tomatoes 24.3%, corn (cream style) 14.8%, sweet peas, 9.7%; b) freezing: spinach 26.9%, broccoli 28.9%, green peas 7.8%, green beans 15.1% and strawberries 7.9%. Organization and Competition in the Fruit & Vegetable Industry, Technical Study No. 4, National Commission on Food Marketing, 1966, U.S.D.A.

ii) Raw Product Costs

Atlantic Region processors are in an advantageous position with respect to raw product availability and price for many fruit and vegetable items. Atlantic Region apple processors in the Annapolis Valley are most favourably located and have a higher percentage of processing-type apples than any other region in Canada. Previous studies have shown that growers in this area have lower costs of production allowing processors to secure raw material at favourable prices.

Contract prices for the major vegetable crops processed in the area are also somewhat lower than for other regions, especially Ontario and British Columbia. However, the imminent establishment of Marketing Boards in at least one Atlantic province may tend to increase the cost of raw material to the level prevailing in other competing provinces having such legislation. Vertical integration by processors in other provinces has tended to eliminate the disadvantages of high raw material cost although the inherent gain may be reflected in corporate farming profit rather than reduced cost of raw material.

iii) Length of Processing Season

The effect which length of production runs can have on total per unit costs in most manufacturing industries is well understood. This same relationship holds true in the fruit and vegetable processing industry in which case it is the length of the processing season that can have important effects on total costs per unit.

The length of processing season in any area is a function of the climate of the area, which affects the quality of the product as well. Information presented in Appendix G indicates the relative advantages enjoyed by the Atlantic Region in the growing of various crops.

iv) Cost of Transportation to Markets

Transportation costs are a significant item as a locational determinant. Ideally, plants should be located as centrally as possible to the area from which raw material is procured and near major centres of population. This is not normally feasible for a wide variety of reasons. In the Atlantic Region, hundreds of miles from the major consuming markets, transportation costs can be a definite deterrent unless compensated for by lower costs in other areas such as labour and raw materials.

APPENDIX G

EFFECT OF CLIMATE ON LOCATION OF FRUIT AND VEGETABLE PROCESSING OPERATIONS

Climate is a most important factor in the adaptability of any region for fruit and vegetable production. Every crop requires a certain climatic environment for optimum growth and maturity. This includes temperature during the growing season, supply and disposition of soil moisture, a sufficiently long frost-free season, sunlight, etc. Also, in the case of biennial and perennial plants, the winter season must not be so severe as to cause "winter killing".

In an attempt to discover the relative advantages or disadvantages of the climate for agriculture in the Atlantic Region as compared with other Canadian areas reference is made to a report of the Canada Land Inventory.[1]

The agricultural areas of Canada are divided into 7 temperature zones based on degree days (d. d.) above 42° and the frost-free period (f. f.) and into 9 moisture classes based on average water deficiency and average May to September precipitation (Tables G-1 and G-2).

By combining 7 temperature zones with 9 moisture classes, sixty-three climatic regions are possible. Since warm-moist or cool-dry regions are not found in Southern Canada, the agricultural areas are covered by 40 regions.

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[1] The Climates of Canada for Agriculture, The Canada Land Inventory, Report No. 3, 1966.

These regions are superimposed on a map of Canada (Figure G-1) and are shown in matrix form in Table G-3.

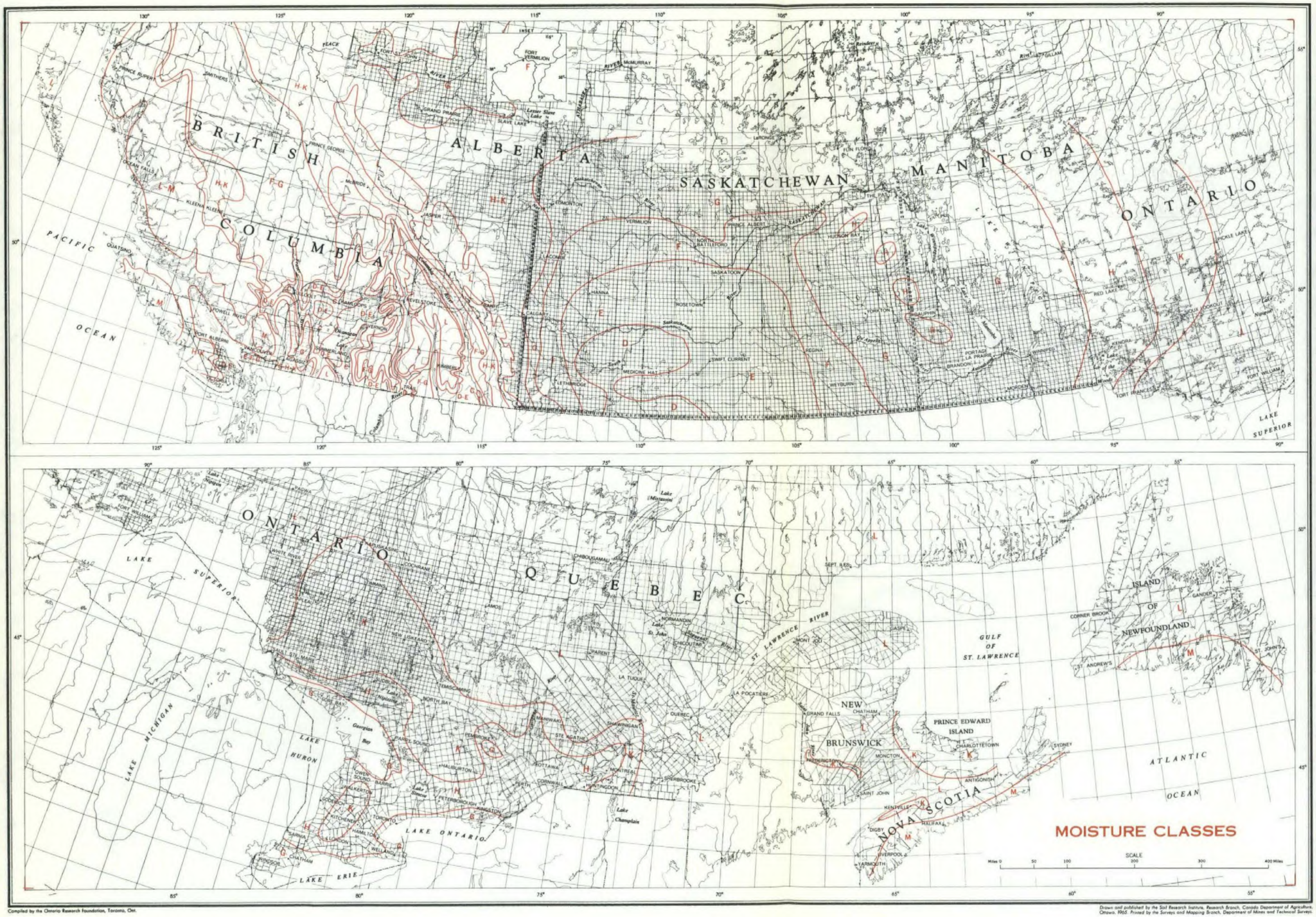
In establishing a location for processing the entrepreneur is interested in the relative climatic advantage of possible locations. Tables G-4 through G-12 indicate those climatic regions which are most suited for support of certain crops.

Although similar climatic regions appear in separate parts of the country, points of difference appear when winter temperatures and other factors are considered. For instance, there are several areas of class 4K; however, the Annapolis Valley, which is also classed 4K, is more suited to apple production because of more moderate winters than any other areas of this type.

TABLE G-1 TEMPERATURE ZONES

These temperature zones are based on degree-days (d. d.) above 42°F and the frost-free (f. f.) period. The agricultural areas of Canada have been divided into temperature zones as follows:

1. Above 4,000 d. d.
2. 3,500 to 4,000 d. d.
3. 3,000 to 3,500 d. d.
4. 2,600 to 3,000 d. d.
5. 2,200 to 2,600 d. d. and
   90 + f. f. days in Alberta and Saskatchewan
6. 1,800 to 2,200 d. d. and
   75 to 90 f. f. days in Alberta and Saskatchewan
7. Less than 1,800 d. d. and
   less than 75 f. f. days in Alberta and Saskatchewan



Compiled by the Ontario Research Foundation, Toronto, Ont.

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FIGURE G-1

CLIMATIC REGIONS

FOR AGRICULTURE

TABLE G-2 MOISTURE CLASSES

These moisture classes are based on average water deficiency and average May to September precipitation. The agricultural areas of Canada have been divided into moisture classes as follows:

Class	Water Deficiency (inches)	May - Sept. precipitation (inches) Over 2600 d. d. *	Under 2600 d. d. *
C	Over 12	Under 6	-
D	12 - 9	6 - 8	-
E	9 - 7	8 - 11	8 - 9
F	7 - 5	10 - 12	9 - 11
G	5 - 3	12 - 13	10 - 13
H	3 - 1	13 - 15	12 - 15
K	1 - 0	15 - 16	14 - 18
L	0	-	16 - 20
M	0	-	Over 20

*d. d. = Degree-days above 42°F.

TABLE G-3 POSSIBLE TEMPERATURE AND MOISTURE COMBINATIONS FOR CANADA

MOISTURE CLASS	TEMPERATURE ZONES 1	2	3	4	5	6	7
C	C1	C2	C3	C4			
D			D3	D4			
E			E3	E4	E5	E6	
F		F2	F3	F4	F5	F6	
G	G1	G2	G3	G4	G5	G6	G7
H		H2	H3	H4	H5	H6	H7
K			K3	K4	K5	K6	
L			L3	L4	L5	L6	
M			M3	M4	M5	M6	

TABLE G-4 CLIMATIC CONDITIONS FOR GROWING APPLES AND PEARS

TEMPERATURE ZONES

MOISTURE CLASS	1	2	3	4	5	6	7
C	C1	C2	C3	C4			
D			D3	D4			
E			E3	E4	E5	E6	
F		F2	F3	F4	F5	F6	
G	G1	G2	G3	G4	G5	G6	G7
H		H2	H3	H4	H5	H6	H7
K			K3	K4	K5	K6	K7
L			L3	L4	L5	L6	
M			M3	M4	M5	M6	

TABLE G-5

CLIMATIC CONDITIONS FOR GROWING POTATOES

TEMPERATURE ZONES

MOISTURE CLASS	1	2	3	4	5	6	7
C	C1	C2	C3	C4			
D			D3	D4			
E			E3	E4	E5	E6	
F		F2	F3	F4	F5	F6	
G	G1	G2	G3	G4	G5	G6	G7
H		H2	H3	H4	H5	H6	H7
K			K3	K4	K5	K6	K7
L			L3	L4	L5	L6	
M			M3	M4	M5	M6	

TABLE G-6

CLIMATIC CONDITIONS FOR GROWING GREEN AND YELLOW WAX BEANS

TEMPERATURE ZONES

MOISTURE CLASS	1	2	3	4	5	6	7
C	C1	C2	C3	C4			
D			D3	D4			
E			E3	E4	E5	E6	
F		F2	F3	F4	F5	F6	
G	G1	G2	G3	G4	G5	G6	G7
H		H2	H3	H4	H5	H6	H7
K			K3	K4	K5	K6	K7
L			L3	L4	L5	L6	
M			M3	M4	M5	M6	

TABLE G-7 CLIMATIC CONDITIONS FOR GROWING PEAS

TEMPERATURE ZONES

MOISTURE CLASS	1	2	3	4	5	6	7
C	C1	C2	C3	C4			
D			D3	D4			
E			E3	E4	E5	E6	
F		F2	F3	F4	F5	F6	
G	G1	G2	G3	G4	G5	G6	G7
H		H2	H3	H4	H5	H6	H7
K			K3	K4	K5	K6	K7
L			L3	L4	L5	L6	
M			M3	M4	M5	M6	

TABLE G-8 CLIMATIC CONDITIONS FOR GROWING BERRIES

TEMPERATURE ZONES

MOISTURE CLASS	1	2	3	4	5	6	7
C	C1	C2	C3	C4			
D			D3	D4			
E			E3	E4	E5	E6	
F		F2	F3	F4	F5	F6	
G	G1	G2	G3	G4	G5	G6	G7
H		H2	H3	H4	H5	H6	H7
K			K3	K4	K5	K6	K7
L			L3	L4	L5	L6	
M			M3	M4	M5	M6	

TABLE G-9 CLIMATIC CONDITIONS FOR GROWING ASPARAGUS

TEMPERATURE ZONES

MOISTURE CLASS	1	2	3	4	5	6	7
C	C1	C2	C3	C4			
D			D3	D4			
E			E3	E4	E5	E6	
F		F2	F3	F4	F5	F6	
G	G1	G2	G3	G4	G5	G6	G7
H		H2	H3	H4	H5	H6	H7
K			K3	K4	K5	K6	K7
L			L3	L4	L5	L6	
M			M3	M4	M5	M6	

TABLE G-10 CLIMATIC CONDITIONS FOR GROWING CUCUMBERS

TEMPERATURE ZONES

MOISTURE CLASS	1	2	3	4	5	6	7
C	C1	C2	C3	C4			
D			D3	D4			
E			E3	E4	E5	E6	
F		F2	F3	F4	F5	F6	
G	G1	G2	G3	G4	G5	G6	G7
H		H2	H3	H4	H5	H6	H7
K			K3	K4	K5	K6	K7
L			L3	L4	L5	L6	
M			M3	M4	M5	M6	

TABLE G-11 CLIMATIC CONDITIONS FOR GROWING TOMATOES

TEMPERATURE ZONES

MOISTURE CLASS	1	2	3	4	5	6	7
C	C1	C2	C3	C4			
D			D3	D4			
E			E3	E4	E5	E6	
F		F2	F3	F4	F5	F6	
G	G1	G2	G3	G4	G5	G6	G7
H		H2	H3	H4	H5	H6	H7
K			K3	K4	K5	K6	K7
L			L3	L4	L5	L6	
M			M3	M4	M5	M6	

TABLE G-12 CLIMATIC CONDITIONS FOR GROWING CORN

TEMPERATURE ZONES

MOISTURE CLASS

	1	2	3	4	5	6	7
C	C1	C2	C3	C4			
D			D3	D4			
E			E3	E4	E5	E6	
F		F2	F3	F4	F5	F6	
G	G1	G2	G3	G4	G5	G6	G7
H		H2	H3	H4	H5	H6	H7
K			K3	K4	K5	K6	K7
L			L3	L4	L5	L6	
M			M3	M4	M5	M6	

APPENDIX H

LIST OF PLANTS PROCESSING FRUITS AND VEGETABLES IN THE ATLANTIC PROVINCES

Location, Type of Processing and Products Produced

The Dominion Bureau of Statistics lists in its annual census of the fruit and vegetable canning and preserving industry firms in the Atlantic Provinces from which they receive annual returns. These firms are the major producers and together account for a major part of the output of processed fruit and vegetable products in the region.

This list has been used as a base to which the names and location of other firms have been added. Processors are classified as major operations or as smaller, domestic, regional and part-time operations.

TABLE H-1

MAJOR FRUIT AND VEGETABLE PROCESSORS, ATLANTIC PROVINCES - 1969

Name of Firm	Location of Plant(s)	Type of Processing	Products
NOVA SCOTIA			
Scotian Gold Co-Operative	Coldbrook	Canning	Solid pack apples, apple sauce, apple juice, apple cider, jams, pears, fruit drinks
M. W. Graves & Co. Ltd.	Berwick	Canning	Peas, beans, apple products, baked beans, pet food, spaghetti, sauerkraut, blueberries
		Freezing	Peas, beans, apple slices, blueberries
Canada Foods Limited Fruit Division	Kentville	Canning	Apple juice, apple juice concentrate, fruit drinks
		Freezing	Blueberries, miscellaneous berries
Canada Foods Limited Pickle Division	Kentville	Canning	Pickles and relish (all types)

Table H-1 MAJOR FRUIT AND VEGETABLE PROCESSORS, ATLANTIC PROVINCES - 1969 - continued

Name of Firm	Location of Plant(s)	Type of Processing	Products
Annapolis Valley Canners, Ltd.	Port Williams	Canning	Apple sauce, apple pie filling, solid pack apples, green and yellow beans, pork and beans, cherry pie filling, blueberry pie filling.
	Berwick	Canning	Pears
	Hantsport	Canning	Apple juice
Nova Scotia Blueberry Exporters Limited	Parrsboro	Freezing	Blueberries, strawberries
Oxford Frozen Foods Ltd.	Oxford	Freezing	Blueberries, strawberries
C. M. McLean Limited	Springhill	Freezing	Blueberries, strawberries
Kent Foods Limited	Wolfville	Canning	Apple juice, fruit drinks, vinegar

Table H-1 MAJOR FRUIT AND VEGETABLE PROCESSORS
ATLANTIC PROVINCES - 1969 - continued

Name of Firm	Location of Plant(s)	Type of Processing	Products
NEW BRUNSWICK			
McCain Foods Limited	East Florence-ville	Freezing	French fried potatoes, peas, beans, broccoli, cauliflower, brussel sprouts, fiddleheads, potato puffs, small whole potatoes, fruit pies
McCready's Limited	Sussex	Canning	Beets, pickles, vinegar, relishes
G. E. Barbour Co. Ltd.	Saint John	Canning	Jams, jellies, marmalades
PRINCE EDWARD ISLAND			
Seabrooke Farms Frozen Foods Limited	Kensington	Freezing	French fried potatoes, peas, broccoli, brussel sprouts, cauliflower
P. E. I. Frosted Foods Ltd.	Charlottetown	Freezing	French fried potatoes, peas, broccoli, brussel sprouts, cauliflower
Langley Fruit Packers Ltd.	Montague	Freezing	French fried potatoes, peas, strawberries, beans, broccoli, blueberries, brussel sprouts, cauliflower, turnips

Table H-1 MAJOR FRUIT AND VEGETABLE PROCESSORS
ATLANTIC PROVINCES - 1969 - continued

Name of Firm	Location of Plant(s)	Type of Processing	Products
P.E.I. Food Products Ltd.	Summerside	Canning	Small whole potatoes
Campbell & Burns Ltd.	Central Bedeque	Canning	Peas, small whole potatoes, beets, peas and carrots, pork and beans

TABLE H-2

DOMESTIC, REGIONAL AND PART-TIME FRUIT AND VEGETABLE PROCESSING OPERATIONS

Name of Firm	Location of Plant(s)	Type of Processing	Products
NOVA SCOTIA			
H. P. Slaunwhite & Cross	Mahone Bay	Canning	Sauerkraut
Meno Hatt	Lunenburg	Canning	Sauerkraut
Canada Packers Ltd.	Halifax	Freezing	Blueberries
DeWolfe, R. W.	Wolfville	Canning	Dehydrated and evaporated apples
Bonda Foods Limited	Yarmouth	Freezing	Blueberries
Bickerton Co-Operative	Port Bickerton	Freezing	Blueberries
Yarmouth Ice Cream & Dairy Co. Ltd.	Yarmouth North	Freezing	Strawberries, blueberries, rhubarb, cauliflower
Guysborough Co-Op Fisheries Ltd.	White Head	Freezing	Blueberries
Twin City Food Products Ltd.	Dartmouth	Freezing	Apples, strawberries, blueberries
Brookfield Creamery Ltd.	Truro	Freezing	Strawberries
Burnell S. Corkum	Chester Basin	Freezing	Strawberries

Table H-2 DOMESTIC, REGIONAL AND PART-TIME FRUIT AND VEGETABLE PROCESSING OPERATIONS - continued

Name of Firm	Location of Plant(s)	Type of Processing	Products
A. H. Beaton	North Sydney	Canning	Pie fillings; apple, lemon, raisin, pineapple, blueberry
MacKenzie Sales Ltd.	Middleton	Canning	Baked beans, salads
S. G. Mason & Son	Chester	Canning	Sauerkraut
NEW BRUNSWICK			
Capital Co-Operative	Fredericton	Freezing	Strawberries
Eagle Fisheries	Shippegan & Loggieville	Freezing	Blueberries
Swin Bros. Fisheries Ltd.	Shippegan	Freezing	Blueberries
T. W. Crocker Co. Ltd.	Newcastle	Freezing	Blueberries
Wallace Hyslop	Moores Mills	Freezing	Blueberries
D. Mallet	Shippegan & Chemcook	Freezing	Blueberries
Ivan W. Reid	Norton	Freezing	Blueberries
Canada Packers	Saint John	Freezing	Blueberries

Table H-2 DOMESTIC, REGIONAL AND PART-TIME FRUIT AND VEGETABLE PROCESSING OPERATIONS - continued

Name of Firm	Location of Plant(s)	Type of Processing	Products
Grand Anse Packers Ltd.	Grand Anse	Freezing	Blueberries
Loggie Co. Ltd.	Shippegan, Chatham, Tracadie, Petit Rocher	Freezing	Blueberries
Mrs. G. Miles	Fredericton	Canning	Pickles
Paturel Limited	Cape Bimet	Freezing	Blueberries
PRINCE EDWARD ISLAND			
Pisquid Strawberry Growers Co-Op	Pisquid	Freezing	Strawberries
Mr. Stewart Strawberry Growers Exchange Ltd.	Mount Stewart	Freezing	Strawberries
Charlottetown Strawberry Growers Assoc.	Charlottetown	Freezing	Strawberries
Montague Cold Storage Ltd.	Montague	Freezing	Blueberries
Jenkin Brothers Limited	Summerside	Canning	
Eastern Packing Co. Ltd.	Souris	Canning	
Graham Wendell	Gasperaux	Canning	

Table H-2 DOMESTIC, REGIONAL AND PART-TIME FRUIT AND VEGETABLE PROCESSING OPERATIONS - continued

Name of Firm	Location of Plant(s)	Type of Processing	Products
NEWFOUNDLAND			
Bernard V. Andrews	St. John's		

NOTE:- There are several fish processing plants located at: Green Pond, Bonavista, Catalina, South Dildo, Harbour Grace, Holyrood, and St. John's, which as an added activity freeze blueberries.

APPENDIX I

ADVANCES IN FRUIT AND VEGETABLE PROCESSING TECHNOLOGY

Introduction

Fruit and vegetable processing continues to have one of the highest growth rates in the food processing industry. Much of this growth arises from new technologies aimed towards convenience, cost-reducing products rather than towards simple preservation of the product.

Some of the more notable developments which have taken place recently have been in the field of dehydration of fruit and vegetable products. These newer methods of dehydration should in no way be confused with dehydration as practiced during the war years. Most of these newer technologies aim at process cost reduction, or distribution cost reduction, and yield products having greater convenience for the consumer.

The practical application of these developments can have drastic effects on the competitive status of similar products processed by more conventional methods.

Aside from the obvious result of competition between products produced by different technologies, the adoption of new technologies by an industry segment may have far reaching consequences on the

competitiveness of industry in different regions. In the case of the apple industry in the Atlantic Region, which is hindered by certain transportation cost disadvantages, a change in technology from freezing to dehydro-freezing or canning to dehydro-canning (each are weight reducing technologies), would enhance their competitive position in distant markets. Shifts in processing technology do not occur over night and, in some cases, it may take several years before complete industry adoption occurs. The processing industry in the Atlantic Region, however, should be keenly aware of the many advantages inherent in the new dehydration technologies.

A brief review of the newer technologies and a discussion of their potential for application in the Atlantic Region follows:

Technologies Having Potential for Development in the Atlantic Region

Dehydro-freezing and dehydro-canning

This method of preservation consists of drying the commodity to approximately 50% of its fresh weight and bulk, while at the same time maintaining quality. Shipping costs are materially reduced and, in the case of frozen goods, the reduction of drip in thawing is considerable. At least eight commercial plants are currently dehydro-freezing apple slices in New York State alone. Freight savings of 50% could

well contribute to more competitive pricing in distant markets for Atlantic Region processors.

Drum Drying

Initial investigations of drum or flake drying were aimed towards an instant dehydrated mashed potato. Considerable research work on this process was carried out by the Federal Department of Agriculture. As a result of this work, a process for the production of instant potato flakes resulted, and is now being used under license by some Canadian processors. One of these licenses is located in the Atlantic Region. This same process can be used to produce instant turnip flakes of good quality based on limited consumer tests.[1] There has been no commercial production to date, possibly due to the limited acceptance of turnips in many areas.

One of the newer applications of drum drying is the production of fruit flakes by use of double drum driers. This method has been extensively used in the production of apple flakes for use in packaged apple sauce cakes. Industry personnel feel that there is a large potential for this process, both in production of ingredients for convenience foods and for export markets, where freight space and con-

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[1] Bruce, B. D. and Drayton, L. E., Consumer Aceptance of Turnip Flakes, Canadian Farm Economics, April 1966, p. 29

Drum Drying - continued

tainer savings are important. This process has been used commercially for the production of ice cream toppings from blueberries and cranberries. It would appear that this process could have considerable potential for the Atlantic Region.

Foam Mat Drying

This process developed by the USDA is now fully commercial and a number of products produced by this method are now commercially marketed. The process entails drying thin layers of stabilized foam material heated by air at atmospheric pressure. The end product has a moisture content of only 2% and retention of colour, flavour and nutritional values are excellent. Products now being produced are instant tomato juice, instant apple juice, instant apple sauce, instant orange juice, as well as powders and flakes of other fruits such as strawberries, raspberries, blackberries and cranberries. These products all reconstitute readily in cold water. Atlantic Region processors should seriously consider the inherent advantages of this method, not only as a transportation cost reducing factor but also as a method of entering the booming convenience food market.

Technologies Having Doubtful Potential for Development in the Atlantic Region

Freeze-Drying

Freeze-drying consists of dehydrating frozen foods under

Freeze-Drying - continued

vacuum so that the moisture content changes directly from a solid form to a gas without going through a liquid stage. The product is dried to a moisture content of 3% or less and is then handled as any dried product. Valuable characteristics not found in normal frozen foods are necessary to justify the added expense of the costly drying process. Many products have been successfully freeze-dried but the most practical from a commercial standpoint are high priced products such as coffee, mushrooms, shrimp and spices. There does not seem to be any commercial application of this process which could be recommended to Atlantic Region processors at this time.

Explosive Puffing

In the explosive puffing process, fruit and vegetable pieces are partially dehydrated in a conventional manner and then heated in a closed vessel having a quick opening lid. The process is similar to that used for producing puffed breakfast cereals. The puffing technique has several advantages for fruit and vegetable pieces to be used in many food forms. It is the first low-cost process that will produce large pieces of dehydrated fruit and vegetables that will reconstitute rapidly. Good results have been obtained with carrots, potatoes, apples and blueberries.

Vacuum Drying and Vacuum Puff Drying

In vacuum drying, water is removed from fruit and vegetable pieces under high vacuum and relatively low temperatures. Most vacuum drying processes involve a concentration before the drying stage. One of the most recent developments is vacuum puff drying. In this process, a high vacuum causes the juice product to puff up to 15-20 times its original volume into a spongy structure. It is then dried at relatively low temperatures and then crushed into a powder. The main advantage of puff drying is the quality and reconstituability of the product and the relatively low cost since it is produced as a continuous process. Although widely adopted, commercial application has been very limited to date.

Cryogenic Freezing

This process entails the use of liquid nitrogen as the source of cold. Extremely rapid freezing is possible, resulting in very small ice crystals as compared to conventional freezing. Commercial application was slow in developing due to the high cost of the source of cold. Over the past few years, large scale production has reduced the cost of liquid nitrogen and an increasing number of companies have used this method. Capital investment in plant and equipment is materially reduced over the conventional ammonia systems.

Cryogenic Freezing - continued

For the major fruit and vegetable processors, standard commercial freezing belts have proven more economical, although capital investment is higher. Liquid nitrogen has found a major market in the convenience food field as well as in the meat and poultry industries. The most recent type of installation is a liquid nitrogen-mechanical combination that has been shown to reduce costs substantially as well as speed up the freezing process.

Irridiation

Irridiation involves the pasteurization or sterilization of foods by exposure to radiation. Although this process has had some limited commercial use, it is not considered as a replacement to current processing techniques. At present, it would appear to have limited application in the fruit and vegetable industry.

APPENDIX J

ADVANCES IN HARVESTING TECHNOLOGY

Introduction

Many fruit and vegetable crops are now mechanically harvested, while many others are fast moving towards this goal. To take full advantage of mechanical harvesting techniques large production units are required. Although some of the larger commercial farms in the United States are of sufficient size to justify ownership of mechanical harvesting equipment the general situation in the industry is that the processor owns this type of equipment and handles the harvesting operations on a custom basis The small size of farm in the Atlantic Region precludes individual ownership since an economic unit to justify this type of equipment would be in the area of 200 acres of peas or 250 acres of beans In fact some processors find it difficult even to contract for fields of an economic size in the Atlantic Region, where farms are generally small and divided into numerous smaller fields. To fully exploit the advantages of the newer types of large scale harvesting machinery, consolidation of small farms and a continuing programme of hedge-row elimination must be practiced.

Mechanical harvesting of the major vegetable crops is much more advanced than with fruit crops. Development of harvesting machinery for tree and small fruit crops has proven to be much more

difficult. A brief review of the present status of mechanical harvesting of certain crops and a discussion of possible effects on the Atlantic Region grower and processor follows:

Present Status of Mechanical Harvesting

Apples

Mechanical harvesting of apples for processing has moved forward at an accelerated rate and in some areas a very substantial volume for processing is now being harvested by the shake-catch method. This method has not proven too satisfactory for dessert-type apples due to excessive bruising. Mechanical aids that position a picker mechanically with fruit removed by hand have been used in a number of areas to increase the picking rate. This method is considered only as an interim step to complete mechanization. Eventually, it appears that mechanical harvesting of apples will be accomplished by greatly improved machines, combined with trees specially bred and pruned for the particular type of machine harvesting.

The reduction in harvest cost will be most helpful to those areas having the highest labour cost as well as possible labour deficiencies.

Apples - continued

Therefore, the advent of this type of harvesting will not enhance the competitive position of the Atlantic Region apple producer nor serve to place the processor in a more favourable position regarding the relative cost of raw material.

Strawberries

Competent authorities feel that machine harvesting of strawberries will be in wide commercial use within three years. Development work is underway at a number of U. S. State Universities as well as at the University of Guelph, Ontario. Prototypes of future machines have shown great promise. However, increased yields will be necessary due to field harvesting losses of 20 to 25 percent. Concentration of the ripening period is also desired so that a once-over harvest will be efficient and economical. Mechanical harvesting could have an affect on the production of strawberries for processing in the Atlantic Region. Problems of picking labour will then have been solved and total production costs will be reduced, allowing growers to profitably supply the processors' requirements. However, as in the case of apples, machines will be available in all producing regions and other competitive factors will be of more significance. It is felt that machine harvesting of berries for processing will precede mechanical

Strawberries - continued

harvesting of fruit to be sold on the fresh market and particularly that intended for shipment to distant markets. For the immediate future, mechanical aids which enable the picker to harvest from a sitting position will serve as an interim step in the harvest of the fresh market crop. The Province of New Brunswick has purchased a number of these harvesting aids for use on an experimental basis.

Raspberries

Until new varieties are developed, incorporating freedom from disease, winter hardiness and better yielding ability for the Atlantic Region, mechanical harvesting will not be a limiting factor. Once varieties of this type are available, it is felt that mechanical harvesters of a suitable type will be available. Both self-propelled and tractor drawn units are commercially available on the West Coast but are not considered entirely suitable for Eastern conditions. Further development work is in progress at the University of Guelph and the University of British Columbia.

Blueberries

Mechanical harvesting of high bush blueberries is now the accepted practice. Ninety-five percent of the total Michigan crop was harvested in this manner in 1968. As yet, no really efficient economical machine has been developed for the low bush blueberry grown in the Atlantic Region. Certain mechanical aids have been proven very beneficial and will undoubtedly be used on a much wider scale. Such devices allow the picker to harvest many times the volume that would be harvested strictly by hand. This will in time serve to maintain a supply of raw material to the processing plants even though competitive factors may have reduced raw material prices to a low level.

Vegetable Crops

Mechanical harvesting of certain vegetable crops is now a well established custom. Atlantic Region processors growing peas and beans are completely mechanized in their field operations. More recently, rapid progress has been made in developing machines for other vegetable crops. Machine harvesting of brussel sprouts is now commercially feasible and is being employed by some Atlantic processors.

Present Status of Mechanical Harvesting - continued

Vegetable Crops - continued

Mechanical harvesting of broccoli and cauliflower is not possible as yet but work is underway on these crops in a number of areas. Plant breeders have developed and are continuing to refine newer strains and varieties of these crops which will be more suitable for machine harvest. Atlantic Region processors are well in line with their counterparts in other parts of Canada in the application of these newer techniques.

APPENDIX K

FACTORS AFFECTING THE CONSUMPTION OF FRUITS AND VEGETABLES

Income

Trends in the consumption of fruits and vegetables derive not only from consumers' willingness to substitute processed for fresh forms but also on their ability to make this substitution. Becuase of processing services added and product waste elimination in manufacture, the unit value of processed fruits and vegetables exceeds that of an equivalent quantity of fresh product. Consequently, consumer income levels affect fruit and vegetable consumption patterns.

Specific relationships between household income and fruit and vegetable consumption are provided by a 1962 Dominion Bureau of Statistics study of urban family food expenditure.[1] Weekly expenditures for all forms of fruits and vegetables was 18 percent greater for families with incomes from $3,000 - $3,999 (Table K-1). As family income increased, canned and dried vegetables were used less in the household diet, while canned and dried fruits, fresh fruits and vegetables, and frozen fruits and vegetables became more important. (Table K-2).

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1 Urban Family Food Expenditure, No. 62-524, D. B. S., Ottawa.

Income - continued

In 1962, Canadian households spent 17.7 percent of their home food dollar for fruits and vegetables (Table K-1). More than one-half of this sum was for fresh fruits and vegetables. In general, the proportion of the family food dollar spent for fruit and vegetable products increased as household income, total food expenditure and family size increased.

Expenditures for fresh fruits, canned and dried fruits, and frozen foods are generally more responsive to changes in family income level than vegetable products.[2] Expenditures for canned and dried vegetables did not change with increases in family income.

Family expenditures for fresh vegetables were very slightly responsive to changes in income.

The "Urban Family Food Expenditure" survey did not indicate the response of specific fruit and vegetable commodities to income; however, a survey carried out in 1965 by the USDA indicates the affect of family or household income on consumption of some major

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2 Frozen fruits, vegetables and juices accounted for over 80% of all frozen food expenditures.

Income - continued

fruit and vegetable items of interest to Atlantic Region processors (Table K-3). This table is analogous to the Canadian situation only insofar as response to income change is concerned; the actual consumption figures should not be taken as representative of consumption of these items in Canada due to differences in price, promotion, habits and availability of these items.

Of special interest to Atlantic processors is the fact that consumption of fresh apples and berries, canned apples, frozen vegetables and fruit juices showed a positive response to increases in household income over the entire range. Fresh potatoes, canned peas and canned beans showed a positive response to increases in household income in the lower income brackets; however, consumption of these three items decreased when income reached the $10,000 plus level.

Regional Variation in Consumption

There are definite differences in food consumption patterns between regions of the country and between areas in each region. Religious differences, race and nationality differences, differences in living patterns and urbanization affect the amount and product form of each fruit and vegetable item consumed.

Regional Variation in Consumption - continued

An example of the variation in consumption between two Canadian areas is that the average weekly family dollar expenditure for canned peas was 0.19 dollars in St. John's and 0.16 dollars in Halifax, and only 0.05 dollars per week in Vancouver. This difference cannot be accounted for by a difference in income levels in the two areas since the consumption of canned peas is relatively unchanged by differences in income. Thus, there are inherent sociological factors which account for an Atlantic Region preference for canned peas.

Households in the Atlantic Region spent considerably more per week for canned and dried fruits, canned and dried vegetables and fresh vegetables than households in other Canadian areas. Table K-4 shows average weekly expenditures for major product forms for seven Canadian cities. Such differences in expenditures between areas cannot be accounted for wholly by price differentials and, to a large extent, reflect differences in per capita consumption of the product forms.

Rural Farm Food Consumption

When assessing the market for individual processed food items, it is necessary - especially in rural areas - to consider the impact of home produced foods in the family diet. A recent study conducted in the United States showed the proportion of home produced foods for urban, rural non-farm and rural farm households, to be 1 percent, 6.8 percent and 31 percent respectively.[3] A survey conducted in 1953 of rural farm households in the Atlantic Provinces showed that approximately 50 percent of household consumption was accounted for by home produced foods.[4] Table K-5 shows the proportion of home produced food for P.E.I. and Nova Scotia for various fruit and vegetable items. This table indicates that well over 50 percent of household needs for fruits and vegetables were satisfied by home products in 1953. Many of the fruits and vegetable items consumed and produced by farm families are preserved by canning. Table K-6 shows the amount of various home preserved items consumed as a percentage of the total rural farm consumption of those items.

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3 Food Consumption of Households in the United States, Spring 1965, U.S. Dept. of Agriculture.

4 Consumption of Food by Farm Households in P.E.I., N.S, and N.B., 1945-46, Department of National Health and Welfare, Canada Department of Agriculture and Nutrition, Economics Division.

The extent to which these figures are applicable to the present situation is unknown. One might guess, however, that considerably less food is being produced by the farm household than previously. Rising incomes, increased mobility and changing habits have no doubt altered the amounts and types of foods consumed by the rural farm householder.

Other Factors Affecting Consumption

There is evidence, substantiated in large measure by the rate at which consumers have substituted processed for fresh forms of fruits and vegetables, that processed products are often cheaper than home processing of their fresh counterparts. A study conducted in the United States found that of 20 processed vegetable products, eleven could be bought more cheaply in processed form than the cost of purchasing fresh ingredients and performing the processing at home; six of fifteen fruit products were cheaper in processed form than home processing of the fresh forms.[5]

These comparisons suggest that relative costs of purchased and home produced processing services, especially when wages are imputed for household services, favour increased substitution of plant for home processing.

Population mobility and suburbanization, as well as rising income levels, have increased the importance of the non-household market for fruit and vegetable products. This market includes hotels, restaurants, industrial food facilities and public and private institutions. Expenditures for food eaten out by the Canadian family increased from 8.8 percent of total food expenditures in 1955 to 11.2 percent in 1962. Consumption of food in the non-household market is characterized by a rate of substitution of processed for fresh forms equal to, if not exceeding, that of the household market.

[5] Harp, H.H., Durham, D.F., Comparative Cost to Consumers of Convenience Forms and Home Process Foods, U.S. Dept. of Agriculture, Marketing Research Dept., No. 609, June 1963, p. 6.

TABLE K-1 FAMILY EXPENDITURE FOR FRUITS AND VEGETABLES AS A PERCENT OF TOTAL FOOD EXPENDITURES[1] BY PRODUCT FORM AND FAMILY INCOME, SEVEN CITIES, 1962.

Product Forms	All Families	Family Income $3,000 3,999	$4,000 4,999	$5,000 5,999	$6,000 6,999	$7,000 7,500
Canned & Dried fruits:	2.4	2.2	2.5	2.4	2.5	2.7
Canned & Dried Vegetables:	2.5	2.7	2.5	2.5	2.5	2.4
Fresh fruits:	5.6	5.3	5.3	5.3	5.6	6.1
Fresh vegetables:	6.1	5.9	5.9	6.0	6.1	6.1
Frozen food:	1.1	0.8	0.8	1.2	1.5	1.5
All fruits and vegetables:	17.7	16.9	17.0	17.4	18.2	18.8
TOTAL, all food (dollars)	20.34	19.56	20.11	21.01	20.07	21.44
Average family size:	3.36	3.19	3.39	3.49	3.29	3.39

1 Includes only foods eaten at home, and not expenditures for food eaten out.

Source: Urban Family Food Expenditures, 1962, 62-524, D.B.S., Ottawa.

TABLE K-2 WEEKLY FAMILY EXPENDITURES FOR FRUITS AND VEGETABLES, BY PRODUCT FORM AND HOUSEHOLD INCOME, SEVEN CANADIAN CITIES,[1] 1962.

Family Income	Canned and Dried Fruits.	Canned and Dried Vegetables.	Fresh Fruits	Fresh Vegetables	Frozen Food	Total
	Dollars Per Family					
All families	.49	.51	1.11	1.22	.23	3.56
$3,000-$3,999	.43	.52	1.04	1.16	.15	3.30
$4,000-$4,999	.50	.50	1.07	1.18	.17	3.42
$5,000-$5,999	.50	.53	1.11	1.27	.25	3.66
$6,000-$6,999	.51	.50	1.13	1.21	.31	3.66
$7,000-$7,500	.57	.52	1.31	1.31	.31	4.02

[1] Cities included in this survey are: St. John's, Halifax, Montreal, Toronto, Winnipeg, Edmonton and Vancouver.

Source: Urban Family Food Expenditure, 1962, 62-524, D.B.S., Ottawa.

TABLE K-3 HOUSEHOLD CONSUMPTION OF SELECTED FRUITS AND VEGETABLES BY PRODUCT : FORM AND HOUSEHOLD INCOME; UNITED STATES, 1 WEEK APRIL-JUNE 1955

Product	Household Income: Less than $1,000	$2,000 -2,999	$4,000 -4,999	$6,000 -7,999	$10,000 or more	All Households
	Pounds per Household					
FRUITS						
Fresh, total	5.9	9.1	10.2	11.6	15.0	9.5
Apples	1.2	1.2	1.5	1.5	1.6	1.3
Berries	.7	.7	.7	.9	1.0	.7
Canned, total	.5	1.1	1.6	2.0	2.2	1.4
Apples	.1	.2	.3	.4	.3	.2
Juice, total[1]	.8	1.6	2.0	2.5	2.6	1.9
VEGETABLES						
Fresh, total	13.5	16.8	17.1	17.6	18.8	16.0
Potatoes	5.1	6.3	6.5	6.3	5.4	5.8
Canned, total	1.6	2.6	2.8	2.9	2.4	2.5
Peas	.3	.5	.5	.5	.4	.5
Beans, snap and wax	.2	.4	.4	.5	.3	.4
Juice, total	.3	.5	.7	.7	1.1	.6
Frozen, total	.1	.3	.6	.8	1.4	.5

[1] Including frozen juices.

Source: Food Consumption of Households in the United States, 1955, U. S. Department of Agriculture, December 1956, Pp. 106-147.

TABLE K-4 AVERAGE WEEKLY FOOD EXPENDITURE BY FRUIT AND VEGETABLE FORM, SEVEN CANADIAN CITIES, 1962.

Product Forms	Seven-city Composite	St. John's	Halifax	Montreal	Toronto	Winnipeg	Edmonton	Vancouver
	Average Dollar Expenditure Per Family							
Canned & Dried Fruits:	.49	.97	.52	.45	.50	.48	.48	.55
Canned & Dried Vegetables:	.51	.73	.61	.60	.46	.43	.56	.42
Fresh Fruits:	1.11	1.11	.97	1.09	1.12	1.10	1.28	1.01
Fresh Vegetables:	1.22	1.74	1.22	1.28	1.24	.97	.99	1.19
Frozen Foods[1]:	.23	.14	.25	.10	.31	.24	.21	.26

[1] Mainly frozen fruits and vegetables.

Source: Urban Family Food Expenditure, 1962, 62-524, D.B.S., Ottawa.

TABLE K-5 PERCENT HOME PRODUCED PROPORTION FOR SELECTED FOOD ITEMS, P. E. I. AND NOVA SCOTIA, 1945-46.

	P. E. I. Home Produced Proportion of Total Weight Consumed	NOVA SCOTIA Home Produced Portion of Total Food Expenditures.
	(Percent)	
Potatoes:	97	95
Tomatoes & Citrus Fruit:	5[1]	8
Tomatoes:	12[1]	
Fruit other than Citrus:	41[1]	45
Fresh, total:	81	
Apples:	87	
Other:	61	
Vegetables:	90[1]	
Fresh, total:	94	
Leafy, green & yellow:	94	86
Other:	94	90

[1] Fresh Equivalent Weight.

Source: Consumption of Food by Farm Households in P. E. I. 1945, and Consumption of Food by Farm Households in N. S., 1945-46, Department of National Health & Welfare, Canada Department of Agriculture and Nutrition, Economics Division.

TABLE K-6 PERCENTAGE OF TOTAL CONSUMPTION OF VARIOUS ITEMS REPRESENTED BY HOME PRODUCED AND PRESERVED FOOD, 1945-46, P.E.I.

FOOD ITEM	PERCENTAGE OF TOTAL BY WEIGHT
Tomatoes, canned:	4
Fruit, canned:	40
Jam & Jelly:	61
Vegetables, canned:	31
Pickles:	82

Source: Consumption of Food by Farm Households in P.E.I., 1945-46 Department of National Health & Welfare, Canada Department of Agriculture & Nutrition, Economics Division.

APPENDIX L

CONSUMPTION OF SELECTED FRUITS AND VEGETABLES BY PRODUCT FORM - UNITED STATES

Fruits & Vegetables	Per Capita Consumption 1963-66 Average	Estimated 1968-69[1]
	(pounds)	
Apples		
fresh	17.0	16.0
canned	3.5	4.0
juice	1.45	1.60
frozen	.43	.47
Pears		
fresh	1.9	2.2
canned	1.9	1.9
Raspberries		
fresh	-	-
canned	-	-
frozen	.15	.14
Strawberries		
fresh	1.3	1.3
canned	-	-
frozen	1.38	1.40

CONSUMPTION OF SELECTED FRUITS AND VEGETABLES BY PRODUCT FORM - UNITED STATES. - continued

Fruits and Vegetables	Per Capita Consumption 1963-66 Average	Estimated 1968-69[1]
	(pounds)	
Potatoes		
fresh[2]	92.1	89.0
table stock[3]	76.0	74.0
canned (retail weight)	0.4	0.6
frozen (retail weight)	5.6	8.0
Cauliflower		
fresh	0.9	0.9
frozen	0.21	0.23
Broccoli		
fresh	0.3	0.3
frozen	.65	.75
Brussel Sprouts		
fresh	0.1	0.1
frozen	0.21	0.22
Peas		
fresh	0.2	0.1
canned	4.1	4.0
frozen	1.90	2.2

CONSUMPTION OF SELECTED FRUITS AND VEGETABLES BY PRODUCT FORM - UNITED STATES - continued

Fruits and Vegetables	Per Capita Consumption 1963-66 Average	Estimated 1968-69[1]
	(pounds)	
Beans (Snap)		
fresh	2.0	1.9
canned	4.8	5.3
frozen	0.9	1.3
Carrots		
fresh	6.6	6.6
canned	0.6	0.7
frozen	.45	.65
Turnips		
fresh	.47	-

Source: Food - Consumption, Prices, Expenditures
Economic Research Service, U.S. Department of Agriculture.

1 Based on projection of historical data.

2 Includes fresh equivalent of potatoes used in mixtures, flour, dehydration, chips, and shoestring potatoes. These uses in recent years have amounted to 16 to 18 percent of the quantity shown.

3 Estimated to be 83 percent of fresh usage.

APPENDIX M

ESTIMATED CONSUMPTION OF SELECTED FRUIT AND VEGETABLE PRODUCTS BY PRODUCT FORM - CANADIAN REGIONS AND NEW ENGLAND MARKET

The starting point for estimating the market for various food items is the per capita consumption of that item. The Dominion Bureau of Statistics publishes yearly a booklet entitled "Apparent Per Capita Domestic Disappearance of Food in Canada". The consumption figures contained therein when multiplied by population within an area provide a rough estimate of consumption in that area. The per capita consumption figures are obtained by taking domestic production figures and adjusting them to take account of changes in supply resulting from trade with other countries, and changes in supply due to changes in inventory over the year. Deductions from the basic commodities are also made for the use of food stuffs by the food processing industry, as well as non-food uses. In the United States, the U.S. Department of Agriculture publishes summary food consumption statistics periodically. The most recent publication is entitled "Food-Consumption, Prices, Expenditures". These sources give gross estimates of consumption of an item which include all food consumed by household and institutional markets.

In Tables M-1 through M-9, the approximate size of Canadian and New England markets for various fruits and vegetables by product forms has been estimated as population times per capita consumption. Adjustments have been made for regional variations in consumption when deemed

necessary and such changes are noted below each table. Canadian per capita consumption estimates are based on 1966 D. B. S. estimates unless otherwise noted. For those items which show substantial yearly variations due to errors in measurement or crop failures, a three year average is employed. A similar procedure is followed for estimating the New England market, based on U. S. consumption estimates for the years 1968-69 (Appendix L).

Consumption estimates are shown in terms of No. 20 tins for most canned items and retail weight for fresh and frozen products.[1] Population data upon which gross consumption estimates are based is for 1968 and is as follows:[2] ('000)

Maritimes	2099	
Quebec	5923	
Ontario	7283	
Manitoba	969)	
Saskatchewan	959)	3448
Alberta	1520)	
British Columbia	2002	
New England	11,210	

1 Weights and Conversion Factors for Canadian Agricultural Products, C. D. A., September '62. This source was used to convert pounds per capita to cases for canned products.

2 Canadian population figures were obtained from Financial Post's 1968-69 Survey of Markets, and the New England figure was obtained by multiplying the 1960 U. S. census figure of 10.5 million by a yearly growth rate of 1.3 percent.

TABLE M-1 ESTIMATED CONSUMPTION OF APPLES BY PRODUCT FORM, 1968.

	British Columbia	Prairie Provinces	Ontario	Quebec	Atlantic Region	New England States
FRESH (million lbs.)	55	83	175	142	55	182
JUICE ('000 cases)[1]	406	679	1180	960	836	425
CANNED ('000 cases)[2]	130	223	472	384	136	2980
FROZEN ('000 lbs.)	800	1380	2900	2390	835	5550

CANADIAN PER CAPITA CONSUMPTION:

Fresh: 24.1 lb. (retail weight)

Juice: 7.3 lb. (net weight canned)

Canned: 2.3 lb. (net weight canned)

Frozen: 0.4 lb. (retail weight)

NEW ENGLAND PER CAPITA CONSUMPTION:

Fresh: 16.0 lb. (retail weight)

Juice:[3] 3.8 lb. (net weight canned)

Canned: 4.0 lb. (net weight canned)

Frozen: .47 lb. (retail weight)

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1 1 case canned = 12-48 oz. cans = 35.6 lbs. net weight juice.

2 1 case canned= 2/3 solid pack at 39 lbs. for 6 - 105 fl. oz. cans, and 1/3 sauce at 31.5 lbs. in 24-20 oz. cans = 35.45 lbs. net weight average.

3 Based on Household Food Consumption Survey 1965-66, Report No. 2, U.S.D.A.

TABLE M-2 ESTIMATED CONSUMPTION OF PEARS BY PRODUCT FORM - 1968

	British Columbia	Prairie Provinces	Ontario	Quebec	Atlantic Region	New England States
Fresh ('000 lbs.)	7,300	12,400	26,000	21,200	7,500	25,000
Canned[1] ('000 cases)	129	222	475	380	135	726
Frozen (million lbs.)	-	-	-	-	-	-

CANADIAN PER CAPITA CONSUMPTION:

Fresh: 3.6

Canned: 2.0

Frozen: -

NEW ENGLAND PER CAPITA CONSUMPTION:

Fresh: 2.2

Canned: 1.9

Frozen: -

[1] 1 case canned = 24-20 oz. tins = 31 lbs. net weight canned.

TABLE M-3 ESTIMATED CONSUMPTION OF STRAWBERRIES BY PRODUCT FORM - 1968

	British Columbia	Prairie Provinces	Ontario	Quebec	Atlantic Region	New England States
Fresh ('000 lbs.)	3020	5150	60,900	8900	3150	14,700
Canned[1] ('000 cases)	4.38	7.50	16.0	12.8	4.57	-
Frozen (million lbs.)	242	413	875	710	250	15,700

CANADIAN PER CAPITA CONSUMPTION:

Fresh:	1.5
Canned:	0.7
Frozen:	1.2

NEW ENGLAND PER CAPITA CONSUMPTION:

Fresh:	1.3
Canned:	-
Frozen:	1.40

[1] 1 case canned = 24-20 oz. cans = 32 lbs. net weight canned.

TABLE M-4 ESTIMATED CONSUMPTION OF RASPBERRIES BY PRODUCT FORM - 1968

	British Columbia	Prairie Provinces	Ontario	Quebec	Atlantic Region	New England States
Fresh ('000 lbs.)	200	344	728	592	209	1110
Canned[1] ('000 cases)	12.7	21.8	46.1	37.6	13.3	-
Frozen (Million lbs.)	1001	1724	3641	2961	1049	15,900

CANADIAN PER CAPITA CONSUMPTION:

Fresh:	0.1
Canned:	0.2
Frozen:	0.5

NEW ENGLAND PER CAPITA CONSUMPTION:

Fresh:	1.3
Canned:	-
Frozen:	1.40

[1] 1 case canned = 24 - 20 oz tins = 31.5 lbs. net weight canned.

TABLE M-5 ESTIMATED CONSUMPTION OF POTATOES BY PRODUCT FORM, 1968

	British Columbia	Prairie Provinces	Ontario	Quebec	Atlantic Region	New England States
Fresh (Million lbs.)	230	400	810	730	345	830
Processed[1] (million lbs.)	77.5	132	280	227	80.5	
Canned ('000 cases)[2]	40.0	69.0	145.0	118.0	41.8	
Frozen (million lbs.)						140

CANADIAN PER CAPITA CONSUMPTION:

Fresh: 115.0 lb. (fresh equivalent weight)

Processed: 38.4 lb. (fresh equivalent weight)

Canned: 0.6 lb. (retail weight)

NEW ENGLAND PER CAPITA CONSUMPTION:

Fresh: 74.0 lb. (retail weight)

Canned: 0.6 lb. (retail weight)

Frozen: 8.0 lb. (retail weight)

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1 Fresh equivalent weight and includes all processed forms - canned, frozen, chips, dehydrated, etc.

2 1 case canned = 24-20 oz. cans = 30 lbs. net weight canned potatoes.

TABLE M-6 ESTIMATED CONSUMPTION OF PEAS BY PRODUCT FORM, 1968

	British Columbia	Prairie Provinces	Ontario	Quebec	Atlantic Region	New England States
Fresh ('000 lbs.)	200.2	344.8	728.3	592.3	209.9	1150
Canned[1] ('000 cases)	368	635	1340	1100	578[2]	1430
Frozen (million lbs.)	6.03	10.3	21.8	17.7	4.6[2]	24.6

CANADIAN PER CAPITA CONSUMPTION:

Fresh: 0.1 lb. (retail weight)

Canned: 5.7 lb. (net weight canned)

Frozen: 3.0 lb. (retail weight)

NEW ENGLAND PER CAPITA CONSUMPTION:

Fresh: 0.1 lb. (retail weight)

Canned: 4.0 lb. (net weight canned)

Frozen: 2.2 lb. (retail weight)

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1 1 case canned = 24 - 20 oz. cans = 31 lbs. net weight canned peas.

2 Atlantic Region consumption estimated at 150 percent of Canadian consumption of canned peas and 66 percent for frozen peas, based on results of the Urban Family Food Expenditure Survey, 1962, D.B.S., 62-524.

TABLE M-7 ESTIMATED CONSUMPTION OF GREEN AND YELLOW BEANS BY PRODUCT FORM, 1968

	British Columbia	Prairie Provinces	Ontario	Quebec	Atlantic Region	New England States
Fresh ('000 lbs.)	2,002	3,448	7,283	5,923	2,099	21,800
Canned[1] ('000 cases)	200	374	800	645	230	1,950
Frozen (million lbs.)	1,400	2,410	5,100	4,140	1,450	14,700

CANADIAN PER CAPITA CONSUMPTION:

Fresh:	1.0
Canned:	3.4
Frozen:	0.7

NEW ENGLAND PER CAPITA CONSUMPTION:

Fresh:	1.9
Canned:	5.3
Frozen:	1.3

[1] 1 case canned = 24-20 oz. tins = 31 lbs. net weight canned beans.

TABLE M-8 ESTIMATED CONSUMPTION OF CARROTS BY PRODUCT FORM 1968

	British Columbia	Prairie Provinces	Ontario	Quebec	Atlantic Region	New England States
Fresh (million lbs.)	35	60	126	103	36.5	74.6
Canned ('000 cases)[1]	78.6	133	254	229	77.5	265
Frozen (million lbs.)						7.36

CANADIAN PER CAPITA CONSUMPTION:

Fresh: 17.4 lbs. (retail weight)

Canned: 1.2 lbs. (net weight canned)

NEW ENGLAND PER CAPITA CONSUMPTION:

Fresh: 6.6 lb. (retail weight)

Canned: 0.7 lb. (net weight canned)

Frozen: 0.65 lb. (retail weight)

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[1] 1 case canned = 24-20 fl. oz. cans = 31 lbs. net weight carrots.

TABLE M-9 ESTIMATED CONSUMPTION OF TURNIPS BY PRODUCT FORM - 1968

	British Columbia	Prairie Provinces	Ontario	Quebec	Atlantic Region	New England States
Fresh ('000 lbs.)	13,000	22,400	47,300	38,500	27,300	
Canned ('000 cases)						
Frozen (million lbs.)						

CANADIAN PER CAPITA CONSUMPTION:

Fresh: 6.5[1]

Canned:

Frozen:

NEW ENGLAND PER CAPITA CONSUMPTION:

Fresh:

Canned:

Frozen:

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1 For all areas except Atlantic Region. Urban Family Food Expenditure survey indicated a consumption level approximately double average Canadian consumption, or 13 lbs. per capita.

APPENDIX N

DEMOGRAPHIC MARKET DATA

Tables N-1 to N-4 set out demographic market data - population, growth rate, number of households - for provinces, regions and major metropolitan areas in Canada. The source of this data is the "Financial Post, Survey of Markets, 1968/69".

TABLE N-1 ATLANTIC REGION MARKET DATA

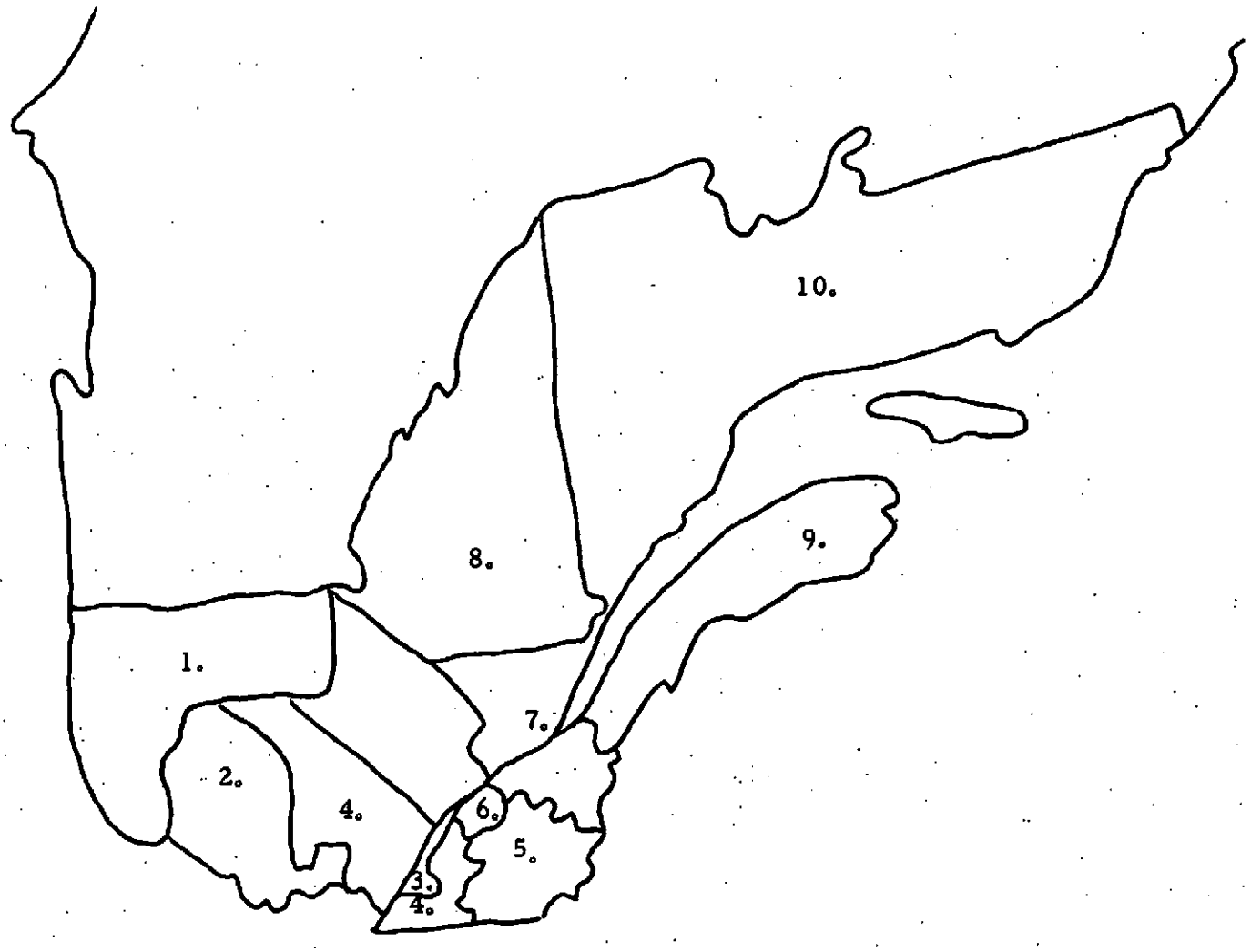
PROVINCE	10 year rate of growth %	Population ('000)	Canadian Total April 1, 1968 %	Households ('000)
New Brunswick:	6	624.0	3.01	143.6
Nova Scotia:	5	760.0	3.67	185.7
Prince Edward Island:	8	110.0	0.53	26.8
Newfoundland:	15	505.0	2.44	98.5
Total Atlantic Region:		2,099.0	10.05	454.6
MAJOR METROPOLITAN AREAS:				
Halifax:	16	203.1	0.98	48.8
St. John's:	21	104.3	0.50	21.2
Saint John:	9	101.6	0.49	26.5
Fredericton:	31	23.7	0.11	6.6
Charlottetown:	2	18.5	0.09	4.7

TABLE N-2 QUEBEC MARKET DATA

ECONOMIC AREA	10-year rate of growth %	Population ('000)	Canadian Total April 1, 1968 %	Households ('000)
1. Abitibi-Tamiscamingue	7	176.6	0.85	35.0
2. Hull-Western Laurentides	18	203.7	0.99	46.3
3. Montreal	29	876.0	4.23	202.7
4. Metro Montreal	29	2,392.0	11.56	660.6
5. Eastern Townships	9	490.3	2.37	111.6
6. Trois Riviéres	1	304.3	1.47	68.8
7. Quebec	16	711.4	3.44	157.5
8. Saguenay - Lake St. John	3	268.5	1.30	48.6
9. Gaspesia - South Shore	-6	383.6	1.85	71.3
10. North Shore - New Quebec	67	116.3	0.56	21.3
TOTAL QUEBEC	19	5,923.0	28.61	1,423.1
MAJOR METROPOLITAN AREAS				
Montreal	30	2,529.6	12.22	693.1
Quebec	29	425.3	2.05	99.9

FIGURE N-1

ECONOMIC AREAS OF QUEBEC



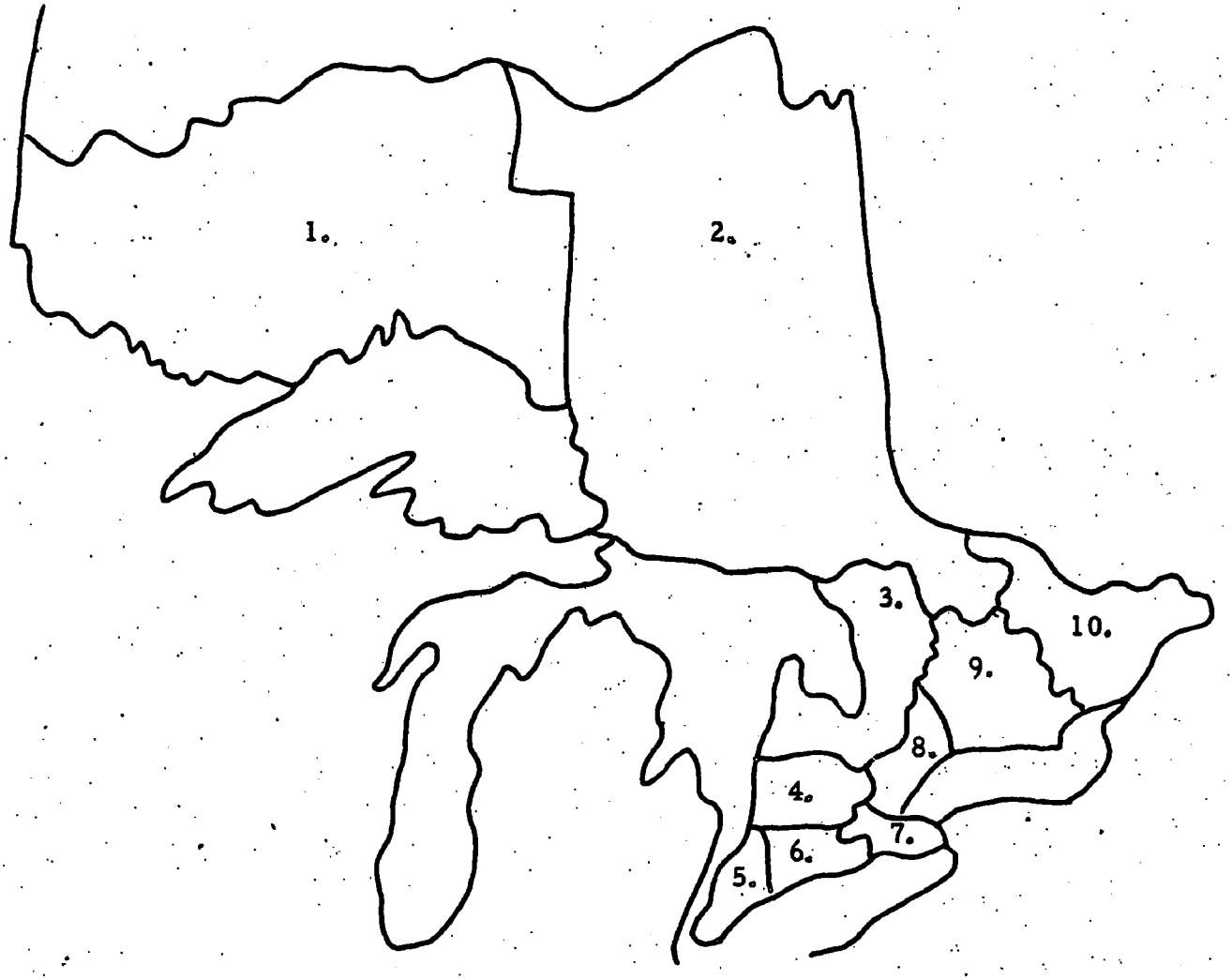
1. Abitibi - Temiscamingue
2. Hull - Eastern Laurentides
3. Montreal
4. Metro Montreal
5. Eastern Townships
6. Trois Rivières
7. Quebec
8. Saguenay - Lake St. John
9. Gaspesia - South Shore
10. North Shore - New Quebec

TABLE N-3 ONTARIO MARKET DATA

ECONOMIC AREA	10-year rate of growth %	Population ('000)	Canadian Total April 1, 1968 %	Households ('000)
1. Northwestern	7	227.2	1.10	58.2
2. Northeastern	6	526.4	2.54	127.4
3. Georgian Bay	9	337.5	1.63	94.5
4. Mid-Western	29	443.9	2.15	121.6
5. Lake St. Claire	18	504.9	2.44	139.0
6. Lake Erie	18	455.3	2.20	129.4
7. Niagara	22	874.6	4.23	240.9
8. Metropolitan	43	2,672.8	12.91	721.1
9. Lake Ontario	10	359.0	1.73	98.6
10. Eastern Ontario	15	881.2	4.25	233.3
TOTAL ONTARIO	25	7,283.0	35.18	1,963.9
MAJOR METROPOLITAN AREAS				
Toronto	30	2,290.7	11.07	623.2
Hamilton	30	473.5	2.29	130.4
Ottawa	32	519.0	2.99	136.6
Windsor	21	220.4	1.06	60.6
London	33	219.9	1.06	63.3
Sudbury	11	119.0	0.57	28.9

FIGURE N-2

ECONOMIC AREAS OF ONTARIO



1. North-western
2. North-eastern
3. Georgian Bay
4. Mid-western
5. Lake St. Claire
6. Lake Erie
7. Niagara
8. Metropolitan
9. Lake Ontario
10. Eastern Ontario

TABLE N-4 WESTERN CANADA MARKET DATA

PROVINCE	10-year rate of growth %	Population ('000)	Canadian Total April 1, 1968 %	Households ('000)
British Columbia	35	2,002.0	9.67	580.3
Alberta	21	1,520.0	7.34	405.4
Saskatchewan	5	959.0	4.63	261.1
Manitoba	7	969.0	4.68	260.4
TOTAL WESTERN PROVINCES		5,450.0	26.32	1,507.2

APPENDIX O

BRAND PREFERENCE DATA FOR SELECTED PROCESSED FRUIT AND VEGETABLE ITEMS

The following consumer brand preference data is based on a survey conducted by the Canadian Daily Newspaper Publishers Association in 1965.[1] The brand data presented represents, in percent, the proportion of households indicating the brand usually purchased in those homes where that product is used. Brand preference data do not necessarily reflect usage in terms of volume. It is entirely conceivable that a brand could have the greater number of users, but due to the pattern of light, medium and heavy users, have a "usually purchased" share which would not match share percentages based on volume of product purchased. Nonetheless, in the absence of other product surveys, the figures are used to indicate market share.

The extent of national and regional market penetration is presented for each product. By examining each table the degree of national and regional market penetration becomes apparent.

An attempt has been made to indicate those brands which are produced by the same company - especially for national companies such as Canadian Canners Ltd. and Green Giant - and in several instances brand names have been connected with the producing firm by means of a footnote.

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[1] Canadian Consumer Survey, Canadian Daily Newspaper Publishers Association, 1965.

	All Respondents[1]	Percent using Product	A & P %	Brookfield[2] %	Capital[3] %	Cudney %	Delnor %	Dominion %	Fraser Vale[4] %	Highliner %	Scotian Gold[5]	Steinberg's %	York %	Zero-Pak[6] %
Maritimes & Newfoundland	1967	31	*	53	14	-	*	3	3	3	2	*	6	11
Quebec	2338	37	11	2	1	2	2	13	10	2	-	17	24	5
Ontario	6869	34	17	2	*	10	4	17	12	3	-	3	19	3
Prairie Provinces	2600	50	*	*	*	*	41	1	34	*	*	*	13	*
British Columbia	2289	40	1	1	*	-	50	1	25	*	-	*	9	1
Canada Total	16063	39	8	5	1	3	18	9	17	2	*	8	16	3

* Less than one-half of one percent.

1 Indicates number of persons who responded to the questionnaire; these figures are constant for all remaining tables.

2 Packed by Brookfield Creameries Limited.

3 Packed by Capital CO-OP.

4 Packed by Langley Fruit Packers Limited

5 Packed by Scotian Gold Co-Operative Limited

6 Packed by P.E.I. Frosted Foods Limited.

Other brands mentioned include: Baxter, Bel-Air, Bird's Eye, Clearbrook and Scona.

TABLE O-2

CANNED PEARS

	Percent Using Product	Avon[1] %	Aylmer[2] %	Bright's %	Del Monte[2] %	Lynn Valley[2] %	Orchard King[3]	Town House %	York %
Maritimes & Newfoundland	79	24	22	3	25	9	*	*	4
Quebec	75	*	29	3	31	4	17	*	2
Ontario	60	*	31	3	23	7	2	1	3
Prairie Provinces	62	*	27	1	15	4	1	21	6
British Columbia	54	1	12	*	7	11	1	11	2
Canada Total	66	2	25	2	22	6	7	6	3

* Less than one-half of one percent

1 Packed by Annapolis Valley Canners Limited

2 Packed by Canadian Canners Limited

3 Steinberg house brand

Other brands mentioned include: Ardmona, Austral, Co-Op, Cudney, Henley, Iona, Malkins, Royal City.

TABLE O-3 CANNED PEACHES

	Percent Using Product	Austral %	Aylmer [1] %	Bright's %	Del Monte [1] %	Hunt's %	Libby's %	Lynn Valley % [1]	York
Maritime & Newfoundland	92	4	16	12	28	4	10	5	3
Quebec	91	1	20	3	33	5	8	2	1
Ontario	76	*	20	4	25	4	8	4	1
Prairie Provinces	73	4	13	1	9	6	28	1	2
British Columbia	65	1	8	*	6	12	11	7	2
Canada Total	80	1	16	3	22	6	12	3	1

* Less than one-half of one percent.

[1] Packed by Canadian Canners Limited.

Other brands mentioned include: A & P, Ardmona, Arkell, Iona, Malkin's, Orchard King, Royal City, Taste Tells, Town House.

TABLE O-4

CANNED PEAS

	Percent Using Product	Avon[1] %	Aylmer[2] %	Blue & Gold %	Del Monte[2] %	Flabor Pak[4] %	"400"[3] %	Graves[3] %	Green Giant[5] %	Green Valley[5] %	Le Sieur[5] %	Libby's %	Lynn Valley[2] %	Orchard King[6] %	Radio %	Stokely's %	York %
Maritimes & Newfoundland	93	11	8	*	4	1	23	19	4	1	*	5	7	1	2	2	3
Quebec	93	*	15	*	10	-	*	*	16	2	3	7	1	8	-	1	4
Ontario	83	*	13	3	6	-	*	*	28	2	1	6	2	1	-	10	4
Prairie Provinces	72	*	9	1	3	-	*	*	27	1	*	15	1	*	-	*	3
British Columbia	71	*	8	*	4	-	*	1	11	2	*	7	2	*	-	*	4
Canada Total	83	1	1	1	5	*	2	2	18	2	2	7	2	3	*	3	4

* Less than one-half of one percent.

1 Packed for Annapolis Valley Canners Limited by Campbell & Burns Limited.

2 Packed by Canadian Canners Limited.

3 Packed byM W. Graves & Company Limited

4 Packed by Campbell & Burns Limited.

5 Packed by Green Giant of Canada Limited. The name Green Valley is probably a misnomer for Green Giant.

6 Steinberg House Brand.

Other brands mentioned include: A & P, Broder, Ideal, Iona, Malkin's, Record, Taste Tells, Town House.

TABLE O-5

SPAGHETTI

Percent Using Product	Catelli %	Chef Boy-Ar-Dee %	Franco-American %	Cattuso %	Graves %	Heinz %	Libby's %
Maritimes & Newfoundland	70	13	6	15	*	2	50	12
Quebec	46	27	7	11	5	-	38	8
Ontario	56	10	10	18	1	-	35	21
Prairie Provinces	55	7	4	18	1	-	22	38
British Columbia	47	6	7	16	1	-	30	26
Canada Total	51	15	7	15	2	*	34	20

* Less than one-half of one percent.

TABLE O-6 VINEGAR

	Percent using product	Canada %	Heinz %	Lion %	McCready[1] %	Schwartz %
Maritimes & Newfoundland	93	3	75	*	9	10
Quebec	96	10	67	15	*	4
Ontario	96	26	65	1	*	2
Prairie Provinces	96	20	69	*	1	1
British Columbia	95	14	80	*	*	1
CANADA TOTAL	96	15	70	6	1	3

* Less than one-half of one percent

1 Packed by McCready Limited.

	Percent Using Product	Aylmer %	Bick's %	Coronation %	Crosse & Blackwell %	Graves[1] %	Heinz %	Libby's %	McCready[2] %	McLaren %	Rose Brand %
Maritimes & Newfoundland	91	5	13	2	2	22	30	3	7	2	7
Quebec	90	8	8	14	1	1	17	3	*	7	2
Ontario	90	6	43	2	1	*	11	2	*	3	20
Prairie Provinces	80	2	45	*	*	*	19	5	*	3	9
British Columbia	85	2	36	1	1	*	22	5	*	4	9
Canada Total	87	5	27	6	1	2	18	3	1	5	8

* Less than one-half of one percent.

1 Packed by Canada Foods Limited, Pickle Division for M. W. Graves & Co. Limited.

2 Packed by McCready Limited

Other brands mentioned include: Dyson, Habitant, Mrs. White, Valley's, Raymond.

	Percent Using Product	A & P %	Aylmer %	Bird's Eye %	Delnor %	Dominion %	Fraser Vale[1] %	Graves 400[2] %	Green Giant %	Libby's %	McCain %	Seabrook Farms[3] %	Snow Crop[3] %	Steinberg's %	York %
Maritimes & Newfoundland	49	*	3	18	-	4	3	17	2	2	37	5	1	*	4
Quebec	38	9	6	19	*	8	5	*	7	5	5	11	1	12	6
Ontario	65	13	3	20	*	9	5	*	12	6	6	2	4	1	9
Prairie Provinces	72	*	3	12	25	1	26	*	4	5	*	*	1	*	7
British Columbia	79	1	3	9	34	*	23	*	3	3	*	*	1	-	9
Canada Total	58	6	4	16	11	5	11	1	6	5	6	5	2	5	7

* Less than one-half of one percent.

1 Packed by Langley Fruit Packers Limited.

2 Packed by M. W. Graves & Co. Limited.

3 Packed by Seabrook Farms Frozen Foods Limited.

Other brands mentioned include: Bel-Air, Broder;

TABLE O-9 CANNED BEANS, BAKED

	Percent Using Product	Aylmer %	Campbell's %	Clark %	Graves %	Heinz %	Libby's %	Puritan %	York %
Maritimes & Newfoundland	87	3	2	30	20	19	18	3	1
Quebec	81	8	1	21	*	18	33	6	2
Ontario	83	6	5	13	-	20	33	*	2
Prairie Provinces	81	9	9	7	-	16	46	*	3
British Columbia	76	8	7	3	-	24	36	1	2
Canada Total	81	8	4	14	1	19	35	3	2

* Less than one-half of one percent.

Other brands mentioned include: Stokely Van Camp, Co-Op, A & P.

	Percent Using Product	A & P %	Avon[1] %	Aylmer[2] %	Del Monte[2] %	Flavour-Pak[3] %	Graves %	Green Giant %	Ideal %	Libby's %	Lynn Valley[2] %	Stokely's[4] %	York %
Maritimes & Newfoundland	81	*	4	19	7	1	36	4	*	8	6	2	5
Quebec	71	3	-	20	10	-	*	15	13	14	1	1	3
Ontario	71	8	-	15	8	-	*	29	1	9	3	9	5
Prairie Provinces	64	*	-	13	5	-	*	27	*	17	1	*	3
British Columbia	72	2	-	8	7	-	-	8	-	9	1	*	2
CANADA TOTAL	71	3	*	15	8	*	3	18	5	12	2	3	3

* Less than one-half of one percent.

1 Packed by Annapolis Valley Canners Limited

2 Packed by Canadian Canners Limited

3 Packed by Campbell & Burns Limited

4 Packed by Stokely Van Camp

Other brands mentioned include: Iona, Raymond, Royal City, Taste Tells, Town House.

TABLE O-11 JAMS

	Percent Using Product	Aylmer %	Crosse & Blackwell %	Empress %	Habitant %	Kraft %	Old City %	Old Homestead %	Raymond %	Robertson %	Rose Brand %	St. Williams %	Scotian Gold %	E. D. Smith %	Welch's %
Maritimes & Newfoundland	86	11	3	*	1	31	3	15	*	1	3	*	8	7	1
Quebec	89	10	2	*	16	24	1	*	11	2	1	1	1	4	1
Ontario	87	12	2	2	1	21	*	*	*	4	5	13	*	12	4
Prairie Provinces	89	5	4	42	-	11	-	*	*	1	1	1	*	5	3
British Columbia	77	9	2	42	-	11	-	-	*	2	*	*	*	1	3
Canada Total	86	9	2	16	6	19	*	1	4	2	2	3	1	5	2

* Less than one-half of one percent.

Other brands mentioned include: Breakfast Club, Chivers, Guest, Iona, Nabob, Wagstaff.

TABLE O-12 JELLIES

	Percent Using Product	Aylmer %	Empress %	Kraft %	Robertson %	Rose Brand %	Shirriff %	E. D. Smith %	Stafford %	Welch's %
Maritimes & Newfoundland	42	8	-	42	1	3	24	9	1	4
Quebec	43	8	*	35	1	1	27	5	2	7
Ontario	39	6	1	27	2	3	19	10	2	5
Prairie Provinces	38	3	16	23	2	1	13	4	1	19
British Columbia	33	2	17	23	2	1	12	2	1	15
Canada Total	39	6	6	29	2	1	20	5	2	12

* Less than one-half of one percent.

Other brands mentioned include: Iona, Keller, Malkin's, Nabob, Oka.

APPENDIX P

PRINCIPAL STATISTICS - FRUIT AND VEGETABLE CANNERS & PRESERVERS, 1965

	ESTABLISHMENTS	MANUFACTURING ACTIVITY							TOTAL ACTIVITY				
		Production and related workers.							Working owners & partners.		Employees		
		Number	Man hours paid	Wages	Cost of fuel and electricity.	Cost of materials and supplies used.	Value of shipments of goods of own manufacture.	Value Added	Number	Withdrawals	Number	Salaries and Wages	Total Value Added
	No.		'000			$'000				$'000		$'000	$'000
Atlantic Region:[1]	21	1237	2454	2693	443	14313	23087	8603	6	12	1440	3615	8743
Quebec:	96	2441	5270	7078	831	43232	69213	27685	36	124	3194	11340	28834
Ontario:	142	8941	18697	30774	3471	168388	277352	114992	32	166	12237	49323	118653
Prairie Provinces:[1]	16	857	1709	2562	405	13341	25501	8916	5	12	1009	3373	10194
British Columbia:	38	1458	2770	4473	464	27476	43600	16004	-	-	1765	6184	16271
CANADA:	313	14934	30900	47280	5614	277650	453753	176100	79	314	19645	73835	182695

[1] Estimated.

Source: Fruit and Vegetable Canners & Preservers, 32-218, D. B. S., Ottawa.

APPENDIX Q

COST OF MATERIALS AND SUPPLIES USED - BY TYPE, FRUIT AND VEGETABLE CANNERS & PRESERVERS, 1965.

	Cost of Material & Supplies used.	Containers & Other Packaging Materials	Operating, maintenance and repair supplies.	Amount Paid to others for work done on material owned by establishments.[2]	Cost of agricultural inputs
			($'000)		
Atlantic Region:	14313	3510	880	49	9874
Quebec:	43232	15442	2041	149	256000
Ontario:	168388	66375	4812	589	96612
Prairie Provinces:	13341	4821	785	46	7689
British Columbia:	27476	8292	573	95	18516
CANADA:	267750	98440[1]	9091	928	158291

1 Estimated from D. B. S. figures

2 Provincial sub-totals, estimated from Canadian total and based on total cost of materials and supplies.

Source: D. B. S. Industry Division.

APPENDIX R

EXPORTS OF SELECTED PROCESSED FRUIT AND VEGETABLE PRODUCTS, BY QUANTITY AND VALUE, CANADA, 1968

Canned Fruits and Vegetables	Unit of Measure	Quantity	Value ($'000)
Apple juice	Gal.	216,513	195
Apple juice concentrates	Gal.	231,764	439
Fruit juices and concentrates, other than apple	Gal.	343,053	1,184
Apples	lb.	6,508,148	710
Pears	lb.	1,580,986	249
Jams, Jellies, Preserves	lb.	6,366,359	1,544
Fruit Pie fillers	lb.	1,145,423	292
Asparagus	lb.	1,442,840	643
Beans, green	lb.	2,721,100	428
Beans, wax	lb.	22,149,566	2,181
Carrots	lb.	109,821	14
Peas	lb.	1,306,209	235
Potatoes	lb.	1,430,370	162
Pickles and Relishes	lb.	4,473,042	957
Sauces, Dressings and Spreads	lb.	5,479,551	1,608

EXPORTS OF SELECTED PROCESSED FRUIT AND VEGETABLE PRODUCTS, BY QUANTITY AND VALUE, CANADA, 1968 - continued

Frozen Fruits and Vegetables	Unit of Measure	Quantity	Value ($'000)
Beans, green and waxed	lb.	888,122	156
Peas	lb.	5,412,273	850
Corn	lb.	4,160,337	657
Potatoe products	lb.	37,128,207	4,899
Blueberries	lb.	12,127,929	2,619
Other Fruits and Berries	lb.	2,261,235	581
Other Vegetables	lb.	3,026,050	648

Source: Exports by Commodities, No. 65-004, D.B.S., Ottawa.

APPENDIX S

PRIVATE LABEL CASE STUDY - M. LOEB LIMITED

M. Loeb Ltd. buys private label goods for distribution through its five regional warehouses to their IGA franchised stores, and to independent and institutional accounts through their smaller "cash and carry" warehouses. Their main warehouses are in Ottawa, Sudbury and London, Ontario, and in Amos and Sherbrooke, Quebec. These would be the Ontario and Quebec destination points for shipments from Atlantic Canada. In addition to the above volume, Loeb has an association with Horne & Pitfield Foods Limited operations in Alberta, where 73 IGA stores are doing approximately $50 million worth of business per annum.

Private Label Goods Carried

Set out below are the main lines of food and grocery products that Loeb (IGA) buy as private label goods - in addition to the nationally advertised lines of the same products:

Coffee, Tea, Cocoa
Cookies and Crackers
Canned Fruit
Canned Vegetables
Canned Juices
Desserts and Toppings
Jams, Jellies & Spreads
Milk - Canned & Powdered
Paper Products
Pet Foods
Pickles, Relishes
Salad Dressings
Detergents and Soaps
Bakery Lines

Private Label Goods Carried - continued

A similar list would apply to Dominion, Steinberg and A & P. Dominion has a large private label programme. Loblaw does not handle private label canned goods. They have access, however, to Weston controlled food suppliers like Neilson's, where their products become something close to "house" brands in Loblaw's stores.

Canned Vegetables

Set out below are the main lines of canned vegetables that are sold in the IGA stores, and nearly all of them are sold via the Top Valu label, in "Choice" quality only.

Peas
Corn
Tomatoes
Green Beans
Wax Beans
Peas/Carrots
Potatoes (small)
Spinach
Asparagus

M. Loeb currently purchases in excess of 150,000 cases of Top Valu peas. Those who buy for Loeb suggest that a close estimate of total market for any line of private label canned goods can be secured by multiplying the Loeb requirement by 5 - e.g. 150,000 x 5 = 750,000 cases of peas.

Small Potatoes

The market for canned whole small potatoes is growing in Central Canada, where two regional suppliers - Aylmer and Culverhouse, pack Ontario potatoes and compete with a third - Cudney - who secures his supplies from a company-controlled subsidiary in P. E. I., i. e. Prince Edward Island Food Products at Summerside, P. E. I.

The potential for this line is tied to the retailers' willingness to promote the product. Because they have just started to move, IGA and other chains should be at a point where they will promote canned small potatoes, and this should stimulate increased buying of the product.

Nationwide Food Services

This Toronto-based company acts for IGA (Loeb) in the distribution of private label goods. They schedule deliveries and move the product to the stores in all territories. Top direction and financing is handled from IGA headquarters.

APPENDIX T

ANALYSIS OF THE SITUATION PREVAILING WITHIN THE FREEZING INDUSTRY ON P.E.I.

The processing industry on Prince Edward Island is experiencing numerous problems. These include labour productivity and availability, attitudes towards raw material procurement, and transportation costs (although we feel undue stress has been placed on this factor as a major problem). The two main problems are undoubtedly high overhead costs due to scale of operation and lack of adequate markets for total utilization of plant capacity.

The situation prevailing within the three frozen food plants operating on Prince Edward Island requires most careful attention if this industry is to be a viable factor in the economy of the region. It is a classic example of over-expansion by multiplication of facilities without an adequate assessment of market potential. There are three plants producing the same commodity items for almost identical market areas. Two of these firms, Seabrook Frozen Foods Ltd. and Langley Fruit Packers Ltd., have installed productive capacity of a viable size if operated at full capacity for a maximum period each year. The third plant, P.E.I. Frosted Foods Limited, is not of a viable size considering the wide range of products packed.

Each of the plants produces basic commodity items on which profit margins are minimal. To compete in the market-place with such products, it is imperative that one have low production costs, including overhead costs, and be of an adequate scale to ensure such a level of cost. Maximum utilization of productive capacity is more essential than total annual output secured by a proliferation of products. It is, therefore, difficult to assess the true viability of scale of operation by the industry standard of pounds produced annually. Although this may serve as a guide, it should not be assumed that a plant having reached an annual output of say, 20 million pounds, (a figure which is frequently considered a basic minimum) has reached a true economic level. There are at least two freezing plants in Ontario specializing in two vegetable items only, with an annual output of 10-12 million pounds and which have been consistently profitable. This has been accomplished by low capital investment and overheads, operation at full capacity for the period that the crop was available and a high degree of managerial skill.

In Prince Edward Island, two plants have an installed productive capacity of approximately 20 million pounds each (Seabrook and Langley) and one an installed capacity of 11-12 million pounds (P.E.I. Frosted Foods). The output of processed product from these three plants over

the past few years has averaged approximately 50-60 percent of installed capacity or 25-30 million pounds annually. This has resulted in exceptionally high overhead costs. To illustrate one aspect of competition which these firms must meet with respect to costs, an efficient frozen food facility should have an overhead cost of 2-1/4 to 2-3/4 cents per pound. It is estimated that the average overhead in these plants would be in the area of 4 to 4-1/2 cents per pound, and possibly higher. If we assume an excess overhead of 1-1/2 cents per pound on a production of 30 million pounds, we arrive at a figure of $450,000 annually. This additional savings to the frozen food industry in Prince Edward Island would place the firms involved in a much superior financial position.

It is difficult to formulate a judgement on all of the corrective steps that should be taken without a detailed analysis of this important segment of the industry. However, certain broad assessments can be made from the information that is available. In any consideration of the corrective steps that should be taken, the factor of sales and marketing must be carefully considered. It is obvious that the Canadian domestic market cannot be expected to absorb the total potential output from these plants in the immediate future. The United States market is effectively shut off due to high tariffs and low unit costs in that

country. The United Kingdom was a natural market for production out of these plants. Until devaluation, returns were adequate but are now reduced to little more than the base cost of production plus transportation costs.

Initially, we believe the approach should be to maximize efficiency while developing additional markets, both domestic and export. Consolidation of the existing plants under a single operating management would result in substantial savings through product specialization in each plant. However, this is not easily accomplished from a marketing standpoint. At present, the two larger plants, Seabrook and Langley, are privately owned, although the major investment in each is held by the provincial government.

It is understood that the Langley operation has been marginal to the extent that it has not reimbursed the provincial government for any part of the original capital investment and, at present, is having difficulty meeting the required interest payments on their loan.

Neither of the two firms has a nationally advertised label on which to build a sound marketing programme.

Foreclosure of the Langley operation would effectively eliminate much of the market developed under the Fraser-Vale label. This

would serve only to release additional productive capacity for which new markets would have to be developed.

If these plants were to be brought under single ownership, it would appear reasonable to re-structure production along the following lines;

1. Concentrate the entire production of green peas and french fried potatoes in one plant which would operate for a full 10 months each year.
2. Shift production of all other products to the second plant which would handle strawberries, beans, broccoli, cauliflower, brussel sprouts and other miscellaneous items, as well as any new products in the convenience food field.
3. The third plant, that formerly operated as P.E.I. Frosted Foods Limited, is not of an economic size under the circumstances to justify continuation as a fruit and vegetable production facility. We suggest that it be sold to an experienced cold storage firm, to be operated as a public cold storage. It is centrally located on the Island at Charlottetown, has fast freezing facilities, a good cold storage and adequate space for packaging operations. It

could serve as a base on which to build a public cold storage serving all segments of the food industry, locally, including the frozen vegetable processors who require additional storage for their products.

The Georgetown Facility

This facility was originally developed as a fish processing operation, and it was thought that a frozen potato operation might be incorporated at some later date. Since the cessation of operations, a number of firms and individuals have searched for an economically viable use for the plant. To date, no proposal has been developed which would warrant rehabilitation of the facility.

The location of the plant and the substantial capital costs necessary for purchase, repair and conversion of the plant to fruit and vegetable processing make it an uninteresting venture. An estimate of the capital cost of refurbishing the plant for use as a public cold storage warehouse and distribution facility is in the $150,000 to $200,000 range. The plant is not centrally located on the Island, resulting in costly transportation services.

The Georgetown Facility - continued

Additional processing facilities are not required as there is already over capacity in relation to existing markets. Certainly if anyone is to operate the Georgetown plant profitably, it will be necessary for the government to write-down considerably the capital cost of the plant.

APPENDIX U

DEGREE OF BARRIERS TO ENTRY TO THE CENTRAL CANADIAN MARKET-PLACE FOR PRODUCTS PRODUCED BY ATLANTIC REGION PROCESSORS

PRODUCT - FROZEN FRUITS

	INSIGNIFICANT	SIGNIFICANT
Overal Concentration	X	
Market Concentration	X	
Product Differentiation Advantage	X	
Economies of Scale in Production and Distribution	X	

PRODUCT - FROZEN VEGETABLES

Overall Concentration	X	
Market Concentration	X	
Product Differentiation Advantage	X	
Economies of Scale in Production and Distribution	X	

PRODUCT - CANNED BEANS, BAKED

	INSIGNIFICANT	SIGNIFICANT
Overall Concentration		X
Market Concentration		X
Product Differentiation Advantage		X
Economies of Scale in Production and Distribution		X

PRODUCT - CANNED BEANS, GREEN AND WAXED

Overall Concentration			X
Market Concentration		X	
Product Differentiation Advantage	X		
Economies of Scale in Production and Distribution			X

PRODUCT - CANNED PEARS

	INSIGNIFICANT		SIGNIFICANT
Overall Concentration			X
Market Concentration			X
Product Differentiation Advantage		X	
Economies of Scale in Production and Distribution			X

PRODUCT - CANNED PEAS

Overall Concentration		X	
Market Concentration	X		
Product Differentiation Advantage		X	
Economies of Scale in Production and Distribution		X	

PRODUCT - VINEGAR

	INSIGNIFICANT	SIGNIFICANT
Overall Concentration		X
Market Concentration		X
Product Differentiation Advantage		X
Economies of Scale in Production and Distribution		X

PRODUCT - PICKLES

Overall Concentration	X	
Market Concentration		X
Product Differentiation Advantage		X
Economies of Scale in Production and Distribution		X

PRODUCT - JELLIES

	INSIGNIFICANT		SIGNIFICANT
Overall Concentration			X
Market Concentration			X
Product Differentiation Advantage		X	
Economies of Scale in Production and Distribution			X

PRODUCT - JAMS

Overall Concentration		X	
Market Concentration		X	
Product Differentiation Advantage	X		
Economies of Scale in Production and Distribution			X