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DAIRY PRODUCT BLENDS OUTSIDE THE COVERAGE OF CANADA'S TARIFF RATE QUOTAS

PROFILE OF THE CANADIAN DAIRY INDUSTRY

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1. Introduction

The Canadian dairy farming sector is the third most important agricultural sector in terms of farm cash receipts, after the grains and red meats sectors. Total dairy farm cash receipts in Canada, i.e. revenue from milk sales plus the federal dairy subsidy, totalled $3.7 billion in the 1996-97 dairy year. However, the relative importance of dairy is not the same in all provinces. In Quebec, dairy cash receipts account for 33.6 percent of all agricultural cash receipts, but in Saskatchewan they are only 1.9 percent.

The dairy processing sector consists of the primary processors who transform the milk received from dairy producers into milk products such as table milk, butter, cheese, ice cream, yoghurt, and milk powders. In 1996, there were 285 primary processing plants, shipping a value in excess of $7.8 billion.

Some of the milk products are shipped to further processors who may use varying quantities of these dairy products as inputs into their food processing activities such as bakery, confectionery, and baby food products. Further processors who have to compete directly with imports, such as certain confectionery producers, have access to lower-priced dairy ingredients.

Other industry players are also involved in the dairy sector. These include transporters of raw milk and foods, food distributors, importers, exporters, wholesalers, retailers, the food service industry and, finally, consumers.

The first part of the report will give a brief overview of the supply management system in the Canadian dairy industry. Most of this information is from the 1996/1997 Annual Report from the Canadian Dairy Commission. The report will subsequently look at the producing sector, i.e. the farmers, followed by the processing sector. The most important dairy products are highlighted. The report concludes with a brief overview of the further processing sector which uses dairy products as inputs in their processing activities.

2. Overview of National Milk Supply Management[1]

There are two markets for milk in Canada: the fluid milk market (table milk and fresh cream) and the industrial milk market (manufactured dairy products such as butter, cheese, ice cream and yoghurt). The industrial milk market includes farm-separated cream

1. Source: Canadian Dairy Commission, Annual Report 1996/1997.

which is used in the manufacture of dairy products. The fluid milk market, which covers approximately 40 percent of milk produced, falls under provincial jurisdiction, whereas the industrial milk market is within federal responsibility. The Canadian dairy industry operates on a dairy year basis which runs from August 1 to July 31.

a) Canadian Dairy Commission

The Canadian Dairy Commission, a federal crown corporation, administers the supply management system for industrial milk.

In March 1965, a federal government Dairy Advisory Committee recommended the creation of the Canadian Dairy Commission (CDC) as an effective means to control milk production and to co-ordinate federal and provincial policies. On October 31, 1966, the Canadian Dairy Commission Act (CDCA) was proclaimed which was the beginning of our current supply management system in dairy.

Section 8 of the CDC Act states, " The objects of the Commission are to provide efficient producers of industrial milk and cream with the opportunity of obtaining a fair return for their labour and investment; and to provide consumers of dairy products with a continuous and adequate supply of high quality dairy products."

The CDC is funded by the federal government, producers and the market place, and strives to balance and serve the interest of all dairy stakeholders - producers, processors, further processors, exporters, consumers, and governments. It is largely responsible for the administration of the National Milk Marketing Plan, the federal-provincial agreement governing industrial milk production, and for actively encouraging dairy stakeholders to work together on policy issues. It also serves as an advisory body for the Minister of Agriculture and Agri-Food.

The CDC has the authority to purchase, store, process or sell dairy products; to make payments to milk and cream producers for the purpose of stabilizing the price of industrial milk and cream; to investigate matters relating to the production, processing or marketing of any dairy product; and to help promote the use of dairy products.

The Commission establishes the national target price for industrial milk, an assumed processor margin and support prices for butter and skim milk powder. The CDC also calculates and recommends the level of the Market Sharing Quota (MSQ) which is the production quota for industrial milk and cream. These elements of supply management are discussed in subsequent sections. Please also see the Glossary at the end of this report.

b) National Milk Supply Management

The National Milk Marketing Plan is a federal/provincial agreement which is administered by the Canadian Milk Supply Management Committee (CMSMC). The CMSMC has representation from the producers of all provinces except Newfoundland which does not have an industrial milk industry. Representatives of national consumer, processor (National Dairy Council) and producer organisations (Dairy Farmers of Canada) participate as non-voting members of the CMSMC.

The domestic market is primarily supplied by Canadian milk production, along with limited imports of butter, cheese, and other dairy products. Each year, based on production and demand forecasts developed by the CDC, the CMSMC sets the national production quota for industrial milk, and regularly monitors and adjusts it when necessary to reflect changes in demand, as measured in terms of butterfat. The Plan establishes each province' s share of the MSQ, and provides for the sharing of any quota changes. Each province then allocates its respective share of the quota to producers according to its own policies.

c) Offer to Purchase Programs

The Offer to Purchase Program allows the CDC to work with the private sector to balance the seasonal demand and supply of products for the domestic market. It also allows the industry or the CDC to export products which are surplus to Canadian requirements at world market prices.

In the past, the programs formed the basis for the pricing structure for industrial milk and dairy products in Canada. Any surplus butter and/or skim milk powder was sold to the CDC which had to purchase the product at the support price and dispose of it on the international market. There was no limit on the amount of butter and skim milk powder that could be sold to the CDC.

Recently, the Offer to Purchase program was modified and consists of several elements.

(i) Surplus Removal Program

The Surplus Removal Program consists of two operational elements: CDC-initiated surplus removal and processor-initiated removal. This system is designed to minimize unplanned exports when unfulfilled domestic and planned export opportunities exist. Before exporting this deemed surplus, the CDC consults with the province of origin

to ensure domestic market needs are being met. If a surplus is identified, the CDC may purchase the product at world market prices for export, or issue class 5e permits to private exporters to undertake the transaction.

(ii) Butter Stocks

The CDC considers the pre-determined "normal" level of butter stocks, currently set at 10 million kilograms by the CMSMC, as the target level of stocks deemed necessary to ensure the domestic market is supplied throughout the year. If stocks are higher during the year and are surplus to the domestic needs, the excess is exported. As is evident in table 24 further in the report, it is possible that at any given time during the year butter stocks are well above the target 10 million kilograms.

Within this level, approximately 2,000 tonnes of so-called Plan A bulk butter stocks is held as a buffer against seasonal deficiencies in domestic market demand.

Plan B is used by firms to balance the seasonality of their production and sales (i.e., supply seasonality) over the calendar year. It is essentially a storage program. Under this plan, manufacturers can sell butter to the CDC, but they must repurchase this butter within one calendar year of its manufacture at the same price they sold it. There is no limit on the amount of butter which may be purchased and sold by the CDC under Plan B.

The total level of butter stocks held by the CDC serves as an indicator of the need to adjust milk quotas or to export surpluses.

(iii) Concentrated Milk Assistance Program

This storage program encourages manufacturers to produce evaporated and sweetened condensed milk during periods of the year when milk supply exceeds domestic needs. A pre-determined level of financial assistance is offered to manufacturers under this program to offset carrying charges caused by additional product storage time.

(iv) Plan B for Skim Milk Powder

This program was implemented to encourage the production of various specialty types of skim milk powder when milk supplies are plentiful, thereby minimizing the demand for fresh skim milk solids in the fall when milk production is traditionally low. The program helps to balance the seasonal demand and supply for this product.

d) Pooling

Revenue pooling systems were developed in response to changing international and domestic conditions in recent years. The implementation of the Pooling Agreements is ongoing and further fine-tuning will continue. Revenue pooling is best explained using the milk classification system.

Most provincial marketing boards and agencies purchase milk from producers and sell it to processors for the manufacture of dairy products. The milk is shipped directly from farms to the processing plant. Most provinces use a plant allocation system to direct milk to processing plants. The milk produced in Canada is sold to processors through a common milk classification system for the manufacture of products according to the following Classes 1 to 5. The processors pay the appropriate class price to the provincial authority who will pool the revenues and distribute it to the producers according to their production. All producers receive the same price except for individual overproduction.

Class 1
a) fluid milks
b) fluid creams
c) milk-based beverages
d) fluid milks for the Yukon and NWT (Alberta only)

Class 2 yoghurt and ice cream

Class 3
a) specialty cheeses
b) cheddar

Class 4
a) butter, powders and condensed milk for ingredient purposes
b) condensed milk for retail
c) new products for the domestic market
d) animal feed and unclassified products

Class 5
a) cheese for further processing
b) all other dairy products for further processing
c) confectionery
d) other competitive markets for dairy products
e) surplus removal

Under the first pooling agreement, known as the Class 5 Pool, which came into effect on 1 August 1995, milk is classified, priced and made available according to its end use in dairy products and products containing dairy ingredients. The market revenue from these Class 5 sales is pooled among all dairy producers in the nine provinces which are signatories to the National Milk Marketing Plan. Prices in Class 5 are set at levels which

allow these Canadian dairy products to compete internationally. The volume of dairy components accessed under this class is monitored through permits issued by the CDC.

Another pooling arrangement, known as the Eastern All Milk Pool, pools the revenue from all milk sales (Classes 1 to 4 included) among Manitoba, Ontario, Quebec, Nova Scotia, New Brunswick, and Prince Edward Island producers. Because six provinces are involved, it is often referred to as the P-6. It came into effect on August 1, 1996.

Since March 1, 1997, a similar arrangement covering Classes 1 to 4, known as the Western Milk Pool or the P-4, is also in place among producers from British Columbia, Alberta, Saskatchewan and Manitoba. Manitoba revenues are shared first with the Western pool and then with the Eastern pool.

e) International Trade Aspects

(i) Imports

For many years, Canada has maintained a range of measures to control dairy product imports, in order to operate and ensure the stability of its national milk supply management system.

These controls changed in 1995, as a result of the World Trade Organisation (WTO) Agreement on Agriculture. Canada and the other signatories agreed to replace former quantitative import restrictions with tariff rate quotas (TRQs). Imports within the TRQs are subject to a low tariff whereas imports in excess of the TRQs must pay a higher tariff, referred to as a tariff equivalent. Countries also had to allow increased access to their domestic market. Canada is committed to allow imports of butter in volumes that will increase until dairy year 2000/2001.

(ii) Exports

Manufactured dairy products, not required to meet Canadian market needs, are either exported directly by the CDC or by private exporters under a system which provides access to milk priced according to the market of destination of the finished product.

On behalf of the industry, the CDC exports mainly butter, evaporated milk and milk powders to state trading agencies in other countries. A wide variety of products are exported directly by the private sector to over 30 countries around the world.

Canada accounts for less than 1 percent of dairy products traded on international markets.

Introduced in August 1995, the Optional Export Program is intended to allow processors and exporters, and the producers who supply them, to take advantage of new export market opportunities without encroaching on existing markets or jeopardising domestic supplies. Under this program, provinces can allocate up to 5 percent of their total production, and individual producers can allocate up to 10 percent of their total production quota for this purpose, if markets exist. Provincial boards and agencies are responsible for determining whether or not the program will be offered within their respective province; for establishing the guidelines under which applications are received from processors and exporters; for determining the method by which the required production would be supplied for approved projects; and for negotiating the price of milk purchased under the program. The 1996-97 Annual Report from the CDC indicates that three contracts were active in the 1996-97 dairy year.

f) Price Setting

The CDC establishes the target price for industrial milk, the assumed processor margin and the support prices for butter and skim milk powder. These levels are reviewed each year on August 1 and February 1.

Establishing the level of the target and support prices involves a decision by the Commissioners of the CDC. Advice received from industry stakeholders, calculations from cost of production formulae, market conditions, the changing dairy environment, and the general state of the Canadian economy are taken into account when dairy prices are reviewed

The target price, according to the CDC Act, is an amount determined to be adequate for efficient milk producers to cover their cash costs and to receive a fair return on their labour and investments related to the production of milk sold for industrial purposes. Support prices are set at levels designed to provide manufacturers of dairy products with an assumed margin to cover costs and a return on their investments, and to provide producers with a fair return.

The target price serves as a guide to provincial authorities who actually determine the milk prices to producers. When the Eastern Canada all-milk pooling was established on August 1, 1996, it became essential that the provincial classification systems be harmonized. It was also agreed that a common price was to be established for each

Class 1 to 4. However, provinces are allowed some limited flexibility in applying these prices. Prince Edward Island is allowed a flexibility of plus/minus 4.3 percent of the price, New Brunswick and Nova Scotia are allowed 3 percent, Manitoba 2 percent, and Ontario and Quebec a one percent deviation.

A further change from the early nineties was the gradual changeover to a Multiple Component Pricing (MCP) system. Producers are now paid on the quantities of butterfat, protein (mainly Casein) and other solids (Lactose and minerals) in the milk shipped. The previous system was based on quantities of milk produced adjusted for the actual butterfat content of the milk.

The main reason for moving to a MCP system is to put in place a more market-oriented pricing system. MCP gives the industry the opportunity to get a full return from the marketplace, where the relative importance of butterfat is declining. It allows for the flexibility to de-emphasize the butterfat value in milk and concentrate on the more valuable components.

Producer revenues are achieved through the market return on milk, i.e. the pooled class prices, and also through a federal subsidy payment for industrial milk production. Funded by the federal government, subsidy payments moderate the price of industrial milk products to consumers by reducing the price required by producers from the market place. The federal subsidy is paid only on industrial milk production that is destined for the domestic market and planned exports to the European Union. The federal dairy subsidy, currently $3.04 per hectolitre, is being phased out by $0.76 per hectolitre per year and should be totally eliminated by February 1, 2002.

The February 1, 1998 pricing decision included a $1.25 per hectolitre increase to $55.48 per hectolitre (containing 3.6 kilograms of butterfat) for industrial milk producers. The reduction in federal subsidy from $3.80 per hectolitre to $3.04 per hectolitre was passed on to the market place through support price adjustments. Butter carrying charges of $0.07 per hectolitre were added to the target return to cover storage and financing of normal levels of butter inventories and a portion of the CDC’s administrative expenses. The support price for skim milk powder was increased from $4.203 per kilogram to $4.431 per kilogram, while the support price for butter was increased from $5.324 to $5.3927 per kilogram. The assumed margin for processors rose from $8.12 to $8.31 per hectolitre of industrial milk.

The relationship between the various prices described in this section are shown by the use of a numerical example in Appendix I. A detailed review of the price-setting structure will be provided in a separate staff report.

3. The Production Sector[2]

a) Milk Production

There are two primary markets for milk: the fluid market which produces table milk and table cream (Class 1); and the industrial milk market which produces dairy products mainly butter, cheddar cheese, specialty cheese, skim milk powder, whole milk powder, ice cream, and yoghurt (Classes 2 to 5).

Total milk production in the 1996-97 dairy year was 72.7 million hectolitres (see Table 1[3]). The fluid milk market accounts for 38 percent of milk production or 27.4 million hectolitres, and the industrial milk market accounts for 62 percent or 45.3 million hectolitres of milk (see Table 2). Quebec is the largest producer of milk with 38.1 percent of the national production, followed by Ontario with 33.4 percent, Alberta (8.3%), British Columbia (7.8%), Manitoba (3.8%), Saskatchewan (2.8%), Nova Scotia (2.4%), New Brunswick (1.8%), Prince Edward Island (1.3%), and Newfoundland which produces only fluid milk (0.4%).

Table 1
Total Farm Sales of Milk by Province
(millions of hectolitres)

Province	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
NFLD	0.296	0.291	0.296	0.306	0.304	0.306
P.E.I.	0.996	0.935	0.961	0.943	0.960	0.928
N.S.	1.688	1.631	1.635	1.669	1.691	1.741
N.B.	1.233	1.178	1.146	1.197	1.231	1.294
Quebec	27.031	25.652	26.483	27.042	27.879	27.663
Ontario	24.042	22.699	22.999	23.655	24.137	24.255
Manitoba	2.824	2.683	2.756	2.841	2.763	2.789
Sask.	2.111	2.049	1.992	2.043	2.032	2.010
Alberta	5.755	5.543	5.575	5.731	5.877	6.004
B.C.	5.110	5.191	5.430	5.672	5.705	5.698
Canada	71.057	67.852	69.273	71.070	72.577	72.686

Source: Statistics Canada, Cat. No. 23-001.

2. Source: CDC, GREPA, Statistic Canada.
3. Total Farm Sales of Milk by Province by calendar year are shown in Appendix II.

Production of fluid milk is based on population and virtually all provinces are self-sufficient in fluid milk. Production shares of total industrial milk is to a large extent based on the production at the time that the national supply management came into being.

Table 2
Regional Farm Sales of Milk and Cream
Dairy Year 1996/1997

	Total	**Fluid**	**Industrial**
Canada (millions of hectolitres)	72.686	27.43	45.25
	As a Percentage of National Sales		
NFLD	0.4	1.2	0.0
P.E.I	1.3	0.5	1.7
N.S.	2.4	3.9	1.5
N.B.	1.8	2.4	1.4
Quebec	38.1	24.6	46.2
Ontario	33.4	36.6	31.4
Manitoba	3.8	4.2	3.6
Sask.	2.8	3.0	2.6
Alberta	8.3	11.3	6.4
B.C.	7.8	12.4	5.1
Canada	100	100	100

Source: Statistics Canada, Catalogue No. 23-001.

The number of farms shipping milk or cream has decreased steadily since the early seventies (see Table 3). Most of the farms exiting the dairy industry were small farms shipping farm-separated cream or those shipping for the industrial milk market only. Since the total production of milk and cream did not change significantly, it is clear that the remaining farms produce, on average, much more milk than they did previously.

Table 3
Number of Dairy Farms

Province	1971/72	1993/94	1994/95	1995/96	1996/97
P.E.I.	2,654	502	485	449	423
N.S.	2,257	503	491	478	455
N.B.	2,332	418	407	395	379
Quebec	44,784	11,864	11,782	11,409	10,986
Ontario	29,515	8,793	8,509	8,195	8,140
Manitoba	10,323	1,154	1,108	948	880
Sask.	14,231	758	763	693	583
Alberta	15,116	1,312	1,272	1,188	1,135
B.C.	1,792	895	883	860	837
Canada	122,914	26,199	25,700	24,165	23,818

Source: Canadian Dairy Commission, Annual Reports.

From 1970/71 to 1995/96, the number of cream shippers declined steadily from 54,233 to 598. In 1970/71, there were 50,808 producers who produced for the industrial milk market only and last year there were 104. Currently, almost all milk producers ship both fluid and industrial milk. Canada has now less than 24,000 dairy farms and it is expected that this number will further decline, albeit at a slower pace.

b) Market Sharing Quota

The MSQ is closely watched by producers because it is the basis for their industrial milk production. For August 1, the beginning of the each new dairy year, the CDC calculates the MSQ based on demand forecasts (Table 4). The MSQ is monitored throughout the year and adjusted when necessary by the CMSMC

Any change in MSQ is reflected at the farm level. The production of industrial milk, other than that for Class 5, receives the domestic price which is higher than the international price. Any overproduction ends up in Class 5e. The higher the volumes produced for Class 5, the lower the average return per hectolitre of milk to producers. Because of changes in domestic demand for dairy products, the MSQ can show significant variability over time. In 1980, the MSQ was set at 175.8 million kgs of butterfat. It slowly decreased until 1988 when it was 170.6 million kgs of butterfat, the decrease accelerated until the quota reached 148.1 million kgs for August 1, 1992. From 1992 on, the MSQ was increased gradually, but for the 1997/98 dairy year it was reduced by 3 percent. Fluid milk production is more stable because total consumption of table milk shows little variation.

Production quota has a value and can be traded, mostly within the same province although recently an inter-provincial quota exchange was established. It should be noted that a producer can produce in excess of his quota but he will not receive the domestic price for that milk, but the Class 5e price which is much lower.

Table 4
Market Sharing Quota by Province, on August 1
(millions of kilograms of butterfat)

Province	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98
P.E.I.	3.019	3.019	3.006	3.006	3.010	2.994
N.S.	1.919	1.917	2.076	2.092	2.058	1.954
N.B.	1.853	1.877	1.975	1.956	1.932	1.904
Quebec	70.183	71.731	74.879	75.186	75.666	73.430
Ontario	46.314	48.584	48.584	48.170	48.391	47.662
Manitoba	5.623	5.715	5.919	5.829	5.505	5.541
Sask.	3.686	3.724	3.926	3.943	3.934	3.848
Alberta	9.748	9.772	10.264	10.303	9.994	9.976
B.C.	6.575	6.625	6.779	7.458	7.158	7.215
Canada	148.101	150.693	157.407	157.942	157.949	154.424

Note: Newfoundland does not have industrial milk quota.
Source: Canadian Dairy Commission, Annual Reports.

c) Volumes and Prices per Class

The following table shows the percentage of total production, in terms of butterfat, in different classes for the 1996/97 dairy year. The prices are for the first 6 months are presented for illustration purpose only. Other periods will show different results.

Among Classes 1 to 4, fluid milk receives the highest price followed by table cream. It should be pointed out that the returns per hectolitre are estimates because producers are paid for the components that are used to make the dairy products. The returns on Classes 5a to 5c are significantly lower. This is the milk used by the further processing industry which is subject to import competition. Classes 5d and 5e receive the lowest price. The lowest return is obtained under Class 5e which is made up of surplus product which is sold at international spot prices.

The volumes give an indication about the importance of the different products and the price illustrates the different prices that producers receive for the same product but for different purposes. For example, during the first six months of 1997, producers received $51 per hectolitre of milk which was used to make butter for the domestic market. For

butter that was used in Class 5b, they received $37 per hectolitre, and for surplus butter (class 5e, the return was $16 per hectolitre.

Table 5
Volumes and Prices per Class

Class	Product	Utilization of Butterfat '000 kgs	Share of Total Utilization	Price per Class, $/hL
Class 1	Fluid milk	83,580	30.2	61
Class 2	Ice cream and yoghurt	20,631	7.5	54
Class 3a	Specialty cheese	61,495	22.2	52
Class 3b	Cheddar cheese	34,323	12.4	50
Class 4a	Butter, Powders	37,230	13.5	51
Class 4b	Condensed milk for retail	2,649	1.0	52
Class 4c	New domestic products	274	0.1	-
Class 4d	Animal feed	1,282	0.5	-
Class 5a	Cheese for further processing	4,813	1.7	36
Class 5b	Other dairy products	5,132	1.9	37
Class 5c	Confectionery	2,871	1.0	33
Class 5d	Other competitive markets	9,462	3.4	25 - 32
Class 5e	Surplus removal	12,472	4.5	16 - 27
Total		**276,214**	**100**	

Note: The utilization of butterfat in each category is an estimation for 1996/97. The prices are for the first 6 months of 1997.
Source: Canadian Dairy Commission.

Whereas the prices in Classes 1 to 4 are relatively stable, the prices in Class 5 are much more volatile. These prices are subject to international price movements and this is reflected in the prices.

d) Financial Situation of Dairy Producers

Total farm cash receipts (including subsidies) for dairy producers in 1996 were close to $4 billion, placing the sector third behind the grains and red meats sectors. The importance of dairy relative to other agricultural sectors varies across provinces. It is relatively less important in the prairie provinces, but it very important in Newfoundland, Quebec, New Brunswick and Nova Scotia (see Table 6). Because of the stability of milk production and managed pricing, dairy farm cash receipts do not fluctuate widely from year to year.

Table 6
Dairy Farm Cash Receipts* - 1995
($000)

Province	Dairy	All Agriculture	Dairy as a % of Agriculture
Newfoundland	22,880	60,899	37.57
P.E.I.	43,299	284,390	15.23
Nova Scotia	88,258	327,464	26.95
New Brunswick	61,744	284,020	21.74
Quebec	1,295,689	3,860,419	33.56
Ontario	1,169,532	6,080,123	19.24
Manitoba	128,720	2,353,170	5.47
Saskatchewan	96,035	5,060,102	1.90
Alberta	268,448	5,693,434	4.72
British Columbia	292,287	1,493,011	19.58
Canada	3,466,892	25,497,022	13.60

Source: Statistics Canada, Cat. N0. 21-603.
Compiled by Groupe de recherche en économie et politique agricoles (GREPA), Université Laval, 1996.
*Not including subsidies.

Dairy farms are highly specialized. More than 60 percent of all dairy farms derive in excess of 90 percent of their revenues from dairy-related activities. One reason for this is that dairy is very labour intensive and the work required is fairly constant throughout the year. Most dairy producers grow some feeds for use on the farms.

The following table shows average dairy farms' operating income classified by revenue size. For this purpose, revenues include revenues from crops, the dairy operation including federal subsidy, livestock, program and insurance proceeds. Expenses include all expenses related to crops, dairy, livestock, and machinery.

Table 7
Revenues and Expenses of Dairy Farms, by Farm Size
1995

Average Farm	$10,000 to $24,999	$25,000 to $49,999	$50,000 to $99,999	$100,000 to $249,999	$250,000 to $499,999	$500,000 and over	All Farms
Revenues	18,448	36,915	76,840	164,106	330,950	747,574	193,634
Expenses	12,348	28,126	54,909	119,671	252,480	595,796	145,076
Operating Income	6,099	8,789	21,931	44,434	78,470	151,778	48,558
No. of farms	580	1,135	3,955	12,745	4,470	910	23,900

Source: An Economic Overview of Farm Incomes by Farm Type-Canada 1995. Agriculture and Agri-Food Canada, September 1997.

e) Some factors affecting production

The national MSQ is based on butterfat self-sufficiency. This quota is calculated as the quantity of butterfat needed to meet the domestic demand for butterfat in dairy products minus the butterfat in the planned imports plus the butterfat in the planned exports.

One factor that reduces the demand for industrial milk is the increasing skim-off from the fluid milk sector. Whereas in the past, the most popular type of fresh fluid milk was whole milk, containing 3.25 percent butterfat, there is now a strong trend towards low-fat milk. The most popular milk is now 2 percent milk with 1 percent milk starting to replace the 2 percent milk. Skim milk is also gaining popularity.

The table below shows per capita consumption of fluid milk.

Table 8
Per Capita Consumption of Fluid Milk in Canada
(litres per capita)

	3.25%	2%	1%	Skim	Buttermilk	Chocolate	Total
1980	41.4	55.1	N/A	3.8	0.6	4.0	104.9
1981	39.9	56.3	N/A	3.4	0.6	4.0	104.2
1982	38.0	58.3	N/A	3.5	0.6	3.6	104.0
1983	35.8	59.7	N/A	3.6	0.6	3.5	103.1
1984	34.0	60.8	N/A	3.8	0.5	3.5	102.6
1985	32.0	61.3	N/A	4.3	0.5	3.4	101.6
1986	30.5	63.3	N/A	4.9	0.5	3.6	102.9
1987	29.5	64.6	N/A	5.4	0.5	4.1	104.2
1988	27.8	64.8	N/A	5.6	0.5	4.1	102.9
1989	25.2	64.4	N/A	6.0	0.5	4.1	100.3
1990	22.4	58.3	6.0	6.5	0.5	4.0	97.7
1991	20.4	57.1	8.7	6.5	0.5	3.5	96.7
1992	18.8	55.1	10.4	6.4	0.5	3.3	94.4
1993	17.4	52.5	11.3	6.3	0.4	3.4	91.4
1994	17.1	50.9	13.2	6.7	0.4	3.9	92.2
1995	16.1	49.0	14.4	7.4	0.4	3.9	91.3
1996	15.0	45.9	15.0	7.6	0.4	3.8	87.8

Note: N/A - data is unavailable.
Source: Statistics Canada, Cat. 91-002, 23-001.
Compiled by GREPA, Université Laval.

The excess butterfat that is extracted from the raw milk, which contains close to 4 percent butterfat, is diverted to the industrial milk market. The increasing trend of low fat milk, therefore, reduces the production quota in the industrial milk market. It is expected that the fluid skim-off will continue to grow over the next years.

Table 9
Fluid skim-off
(million kilograms of butterfat)

Province	1988	1990	1992	1994	*1995	1996
P.E.I.	.104	.121	.130	.130	.147	.147
N.S.	.788	.931	1.010	.935	.975	1.047
N.B.	.563	.606	.705	.720	.752	.752
Quebec	3.722	4.675	6.056	6.367	6.937	7.426
Ontario	10.198	11.920	12.807	13.317	14.990	15.184
Manitoba	.972	1.152	1.290	1.456	1.702	1.890
Sask.	.810	.992	1.164	1.133	1.310	1.332
Alberta	1.947	2.167	2.640	2.601	3.362	3.416
B.C.	1.526	2.005	1.965	2.426	3.398	4.100
Canada	20.613	24.572	27.769	29.090	33.577	35.298

*1995 adjusted for Harmonized Classification.
Source: Canadian Dairy Commission, CMSMC reports.

From 1988 to 1996, the increase in fluid skim-off amounted to approximately 14.7 million kilograms of butterfat representing an increase of 71 percent.

In addition, there is also the continuing consumer trend towards low-fat products and the continuing health pressure to eat less fat. Butter is often identified in the media as a high risk product in terms of health.. With an ageing population, these health concerns are expected to become even more important.

Table 10 identifies the per capita demand for various dairy products in Canada. Butter consumption has been declining while cheese, particularly specialty cheese, has been increasing. Ice cream consumption is declining slightly with significant annual swings, while yoghurt demand increased rapidly in the eighties but appears to have levelled off.

Table 10
Per Capita Demand for Dairy Products

	Butter	Cheddar Cheese	Processed Cheese	Specialty Cheese	Yoghurt	Ice Cream
		kilograms per capita			litres per capita	
1978	4.56	1.41	2.97	3.30	1.69	12.24
1979	4.46	1.98	2.80	3.50	1.65	12.96
1980	4.53	1.94	2.93	3.57	1.64	12.98
1981	4.43	1.95	2.97	3.76	1.68	12.83
1982	4.29	1.57	3.02	3.98	1.74	12.35
1983	4.38	1.59	3.05	4.00	1.90	12.58
1984	4.28	1.90	2.87	4.18	2.13	12.06
1985	4.10	2.15	2.80	4.66	2.43	12.33
1986	3.93	2.37	2.68	5.24	2.77	12.55
1987	3.93	2.34	2.82	5.51	3.20	12.15
1988	3.83	2.10	3.08	5.61	3.29	12.39
1989	3.62	2.15	3.05	5.79	3.36	11.99
1990	3.28	1.69	3.05	5.47	3.28	11.47
1991	2.99	1.86	2.76	5.53	3.18	10.88
1992	2.84	1.72	2.78	5.71	3.05	10.30
1993	2.99	1.92	2.69	5.90	3.01	10.93
1994	2.86	1.95	2.75	5.95	3.06	11.80
1995	2.74	2.18	2.72	5.59	3.02	11.46
1996	2.76	N/A	2.55	5.74	3.13	11.03

Note: Per Capita demand for cheddar cheese does not include cheddar cheese going into processed cheese.
N/A - data is unavailable
Source: Statistics Canada, Cat. 32-229, 91-002. Compiled by GREPA, Agriculture and Agri-Food Canada.

Another factor reducing the demand for industrial milk is the increased market access that Canada has agreed to give to foreign dairy products. Under the WTO agreement the tariff rate quota for butter, for the dairy year ended in 1996, was 1,964 tonnes. This will increase to 3,274 tonnes for the year ending in 2001. In 1996, these imports of butter represented 2 percent of Canadian butter production.

f) International Comparison of Dairy Farms

There is enormous variety among dairy producing countries in terms of dairy industry structure. However, the trend is towards fewer and larger farms. Given the geographical differences among countries, this diversity is not surprising. New Zealand is

the Western world's lowest cost producer mainly because the dairy herds are out in pastures most of the year. In North America and Western Europe on the other hand, the dairy herds require far more labour-intensive management. In the United States, particularly in California and the Pacific South Western States, dairy herds of several thousand head are found.

Table 11 shows a brief comparison of the dairy sectors in different countries and regions.

Table 11
International Comparison of Dairy Farms

	Volume (litres in millions)	No. of Farms	Herd Size	Production per Farm (litres)	Production per Cow (kgs)	Average Farm (hectares)
Ontario	2,259	9,770	42.9	231,218	5,546	N/A
Quebec	2,581	12,659	39.6	203,887	5,299	93.6
California	10,111	4,000	302.5	2,527,661	8,595	158.2
Wisconsin	10,074	30,000	51.4	335,801	6,716	87.4
Minnesota	4,270	12,500	50.8	341,611	6,924	138.2
New York	5,034	10,700	67.9	470,461	7,122	87.3
Sweden	3,259	18,897	27.8	172,453	6,385	44.0
U.K.	13,758	41,000	64.3	335,554	5,390	52.1
Australia	7,125	14,622	116.1	487,300	4,319	183.0
N. Zealand	8,077	16,710	155.8	483,369	3,192	102.7
Denmark	4,336	18,000	39.8	249,891	6,536	37.1

Note: N/A - data is unavailable.
Source: GREPA, Université Laval, Quebec Dairy Facts and Figures, 1996.

4. Profile of the Canadian Dairy Processing Sector

a) Overview[4]

In 1996, dairy products were manufactured and shipped from an estimated 285 processing plants located across Canada. These products were valued at $7.8 billion and represent 14 percent of all Canadian food and beverage manufacturing. The two principal milk markets in Canada are for fluid milk and industrial milk. The fluid

4. Source: Canadian Dairy Commission and Agriculture and Agri-Food Canada.

market (table milk and fresh cream) accounts for about 38 percent of milk produced. The remaining 62 percent supplies industrial markets, and is manufactured into products such as butter, milk powders, lactose, ice cream and ice cream novelties, yoghurt and a wide variety of cheeses.

The processing industry is heavily concentrated in Ontario and Quebec which account for 71 percent of output. Quebec is the dominant producer of industrial milk, and is the country's leading producer of butter, cheese, milk powders and yoghurt, while Ontario is the major ice cream producer with 45 percent of total Canadian production.

Table 12 provides an overview of recent trends in employment, plants and shipments in the processing sector of the dairy industry.

Table 12
Trends in the Dairy Processing Sector

	1991	1992	1993	1994	1995	1996
Employment	23,557	20,616	20,245	20,798	23,969	22,231
Plants	316	308	291	278	270	285
Shipments ($ million)	7,570	7,443	7,318	7,290	7,350	7,795

Note: The number of plants for 1996 is an estimate provided by Agriculture and Agri-Food Canada.
Source: Statistics Canada and Agriculture and Agri-Food Canada.

b) Industry Structure

There has been a trend toward consolidation in the Canadian dairy processing industry. The industry's global environment has led to acquisitions, mergers and plant closures along with the concentration and specialization of processing activities. Industry ownership has become highly concentrated. Three organizations have annual dairy product sales of more than $1 billion and five organizations control fifty percent of all industry plants accounting for more than 60 percent of production.[5]

The following are some of the major recent acquisitions that have occurred in the dairy industry. After purchasing Beatrice Foods in April 1997 and part of Ault Foods Limited in July 1997, Parmalat, is now the largest dairy processing operation in Canada. Nestlé, who purchased the ice cream making operations of Ault and Dairyworld in December 1996, together with Unilever, now control a large proportion of ice cream production in Canada. Other prominent firms include Kraft, Saputo, Agropur Co-operative (Quebec), Groupe Lactel, Delisle/Danone and Dairyworld.

5. Source: Agriculture and Agri-Food Canada - Dairy Market Review 1996.

c) Regional Distribution and Economic Activity

In the 1995/96 dairy year, nearly 73 million hectolitres of milk, destined for both the fluid and industrial milk markets, were sold in Canada. Although dairy processing plants are located in every region of the country, most milk processing is located in Ontario and Quebec. Ontario has the greatest number of processing plants while Quebec had the highest value of shipments. In 1994, the value added to dairy products (i.e., the increase in value as they move through various production stages) was $2.2 billion. Ontario and Quebec comprised 80 percent of this total. British Columbia and Alberta followed as the next most important dairy processing provinces in terms of value added.[6]

d) Industrial Milk Processing Sector

More than 45 million hectolitres of milk were processed by the industrial sector in the dairy year ended in 1996. Quebec (46%) and Ontario (31%) accounted for 77 percent of farm sales to the industrial milk sector.

e) Fluid Milk Processing Sector

In the dairy year ended in 1996**,** fluid milk processors shipped 27 million hectolitres of milk. Ontario accounted for 36 percent of all fluid milk processing by volume and Quebec represented 25 percent.

f) Trade[7]

World trade in dairy products represents only 7 percent of world food trade. Europe is the leader in world trade in dairy products with a little over 50 percent, Canada's share is less than 1 percent. In 1995, Canada exported $263 million in dairy products, up 16 percent from 1994. In 1996, exports totalled $339 million, up nearly 30 percent from 1995.

Canadian exports of dairy products are approximately 3 to 5 percent of total domestic shipments. More than 50 percent of these exports are in the form of milk powders and butter, over 24 percent is for cheese, whey products account for 9 percent, and ice cream makes up 5 percent. The remainder of exports are other dairy products.

6. Source: Statistics Canada and the Canadian Dairy Commission.
7. Source: Agriculture and Agri-Food Canada - Dairy Market Review.

On a value basis, Canada's major export destinations are Africa (milk powders), followed by the United States (cheddar cheese and whey products), and the European Union (cheddar cheese).

Canadian imports of dairy products totalled $288 million in 1996, an increase of 62 percent since 1992. Total imports of dairy products represented 3.7 percent of domestic shipments in 1996. The European Union is Canada's main foreign supplier of dairy products, with 42 percent of total imports coming from this region. The United States is the second largest supplier with 28 percent. Imports of cheese represent more than half of dairy imports, primarily specialty cheeses from the European Union.

g) Overview of Selected Dairy Products

Table 13 shows the production of selected dairy products for the five dairy years ended in 1996/97. Statistics are presented on a calendar year basis in Appendix II.

Table 13
Production of Selected Dairy Products
('000 kilograms)

Product	1992/93	1993/94	1994/95	1995/96	1996/97
Ice Cream	152,152	169,340	170,559	168,128	158,889
Yoghurt	89,935	95,007	94,827	99,376	98,194
Butter	83,933	85,175	90,804	96,230	89,922
Specialty Cheese	157,575	159,308	164,902	169,463	180,088
Cheddar Cheese	104,992	119,025	114,526	117,998	122,534
Processed Cheese	77,792	76,003	76,067	74,657	76,300
Skim Milk Powder	50,519	54,674	67,132	70,801	61,862
Concentrated Whole Milk	48,250	47,203	56,854	56,280	71,299

Note: Ice cream converted to kilograms from litres (1kgm = 2litres).
Source: Statistics Canada and Agriculture and Agri-Food Canada.

h) Ice Cream

(i) Production

Table 14 shows the production of ice cream since the 1992/1993 dairy year.

Table 14
Production of Ice Cream
('000 litres)

	1992/93	1993/94	1994/95	1995/96	1996/97
Hard Ice Cream	287,496	321,418	319,745	320,484	301,872
Soft Ice Cream	16,809	17,262	21,373	15,773	15,906
Total Ice Cream	304,305	338,680	341,118	336,257	317,778

Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5660.

After rising by 11 percent in the 1993/94 dairy year, production levels of ice cream stabilised over the next two years. However, production decreased by 6 percent in 1996/97. Hard ice cream accounts for approximately 95 percent of total ice cream production.

Tables 15 and 16 show the production of hard and soft ice cream individually, and by province.

Table 15
Production of Hard Ice Cream by Province
('000 litres)

	1992/93	1993/94	1994/95	1995/96	1996/97
Quebec	50,169	62,611	61,106	58,355	58,512
Ontario	126,941	142,009	138,496	145,989	144,167
Manitoba	15,885	16,999	16,601	15,829	C
Alberta	26,826	32,551	34,542	C	C
B.C.	30,951	30,091	33,974	C	C
Others	36,724	37,157	35,026	100,311	99,193
Canada	287,496	321,418	319,745	320,484	301,872

Note: C - Data is confidential and is reported in the others category.
Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5660.

In the 1996/97 dairy year, Quebec represented 17 percent of total Canadian production of hard ice cream and Ontario accounted for 48 percent. Canadian production of hard ice cream rose nearly 12 percent in the 1993/94 dairy year, remained steady over the next two years but fell by 6 percent in 1996/97.

Table 16
Production of Soft Ice Cream by Province
('000 litres)

	1992/93	1993/94	1994/95	1995/96	1996/97
Quebec	3,894	3,553	7,112	6,932	8,135
Ontario	2,274	2,555	2,420	1,812	2,100
Manitoba	1,749	1,848	1,835	C	C
Alberta	2,537	3,037	3,272	C	C
B.C.	4,152	4,017	4,448	C	C
Others	2,203	2,252	2,286	7,029	5,671
Canada	16,809	17,262	21,373	15,773	15,906

Note: C - Data is confidential and is reported in the others category.
Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5660.

In the dairy year 1996/97, Quebec represented 51 percent of total Canadian production of soft ice cream and Ontario accounted for 13 percent. Canadian production of soft ice cream peaked at 21.4 million litres in the year ended in 1994/95, but declined by 26 percent in 1995/96 and experienced only a marginal increase in 1996/97.

(ii) Domestic Consumption of Ice Cream

Table 17 shows the domestic consumption of ice cream for the five dairy years ended 1996/97.

Table 17
Domestic Consumption of Ice Cream
('000 litres)

	1992/93	1993/94	1994/95	1995/96	1996/97
Production	304,305	338,680	341,118	336,257	317,778
Imports	983	1,090	674	1,234	1,006
Exports	3,060	5,040	6,798	11,120	9,402
Domestic Consumption	302,228	334,730	334,994	326,371	309,382

Note: Opening and closing stocks are assumed to be nil.
Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5638, 5659 & 5667.

(iii) Imports of Ice Cream

Table 18 shows imports of ice cream over the five calendar years ended 1996.

Table 18
Imports of Ice Cream
('000 litres)

	1992	1993	1994	1995	1996
United States	930	975	912	828	988
Other Countries	4	0	30	6	3
Total Imports	934	975	942	834	991

Note: Converted from kilograms on the basis of 1kgm = 2 litre (provided by Agriculture and Agri-Food Canada).
Source: Statistics Canada and Agriculture and Agri-Food Canada.

Over 95 percent of Canadian imports of ice cream originate from the United States. Although imports have been stable over the years they decreased more than 11 percent in 1995 before increasing by 19 percent in 1996.

(iv) Exports of Ice Cream

Exports of ice cream are shown on the table below.

Table 19
Exports of Ice Cream
('000 litres)

	1992	1993	1994	1995	1996
Japan	1,194	1,753	1,965	2,544	3,249
United Arab Emirates	0	705	625	690	1,394
Saudi Arabia	11	554	997	1,085	1,940
Kuwait	0	327	377	613	554
Russia	0	356	553	1,107	414
Germany	0	0	0	753	601
Other countries	102	487	1,146	1,432	2,329
Total Exports	1,307	4,182	5,663	8,224	10,481

Note: Converted from kilograms on the basis of 1kgm = 2 litre (provided by Agriculture and Agri-Food Canada).
Source: Statistics Canada and Agriculture and Agri-Food Canada.

Canada's exports of ice cream have increased substantially in each of the last four years. In addition to increased exports to traditional purchasers such as Japan, there has been a significant rise in exports to both the Middle East and Europe. Overall exports of ice cream have increased to more than 8 times their 1992 level.

(v) Ice Cream Mix

Ice cream mix is the industrial product from which ice cream is made. It traditionally contains between 10 and 12 percent butterfat by volume, twice the percentage of traditional ice cream. However, butterfat content is changing with the trend to low fat ice cream gaining popularity. The table below shows production of ice cream mix by province.

Table 20
Production of Ice Cream Mix by Province
('000 litres)

	1992/93	1993/94	1994/95	1995/96	1996/97
Quebec	35,821	40,195	39,393	36,071	35,459
Ontario	62,067	69,446	67,679	72,874	72,171
Manitoba	8,978	9,590	9,386	C	C
Alberta	15,054	18,234	19,395	11,900	14,520
B.C.	18,387	17,853	20,093	20,070	11,765
Others	18,224	18,482	17,212	28,380	22,418
Canada	158,531	173,800	173,158	169,296	156,332

Note: C - Data is confidential and is reported in the others category.
Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5657.

i) Yoghurt

Yoghurt has been one of the success stories of the dairy industry. Demand for this product has increased steadily but seems to have reached a saturation point. New products are constantly being developed, especially low-fat products.

Table 21
Production of Yoghurt by Province
('000 kilograms)

	1992/93	1993/94	1994/95	1995/96	1996/97
Quebec	38,132	42,686	42,092	48,050	49,194
Ontario	33,475	32,377	30,841	30,209	32,355
B.C	9,488	9,112	9,110	8,392	C
Others	8,840	10,832	12,784	12,725	10,236
Canada	89,935	95,007	94,827	99,376	98,194

Note: C - Data is confidential and is reported in the others category.
Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5665.

Table 22
Domestic Consumption of Yoghurt
('000 kilograms)

	1992/93	1993/94	1994/95	1995/96	1996/97
Production	89,935	95,007	94,827	99,376	98,194
Imports	567	427	331	223	280
Exports	108	139	132	126	129
Domestic Consumption	90,394	95,295	95,026	99,473	98,345

Note: Data will be updated when it becomes available.
Opening and Closing Stocks are assumed to be nil.
Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5638, 5659 & 5667.

j) Butter

Over the years, the importance of butter has declined although it remains one of the main dairy products. However, the growing popularity of margarine as a spread has affected the demand for butter. Similar trends have been observed in most western countries. Butter is also used in the further processing industry and has to compete head-on with other oils.

Table 23
Production of Butter by Province
('000 kilograms)

	1992/93	1993/94	1994/95	1995/96	1996/1997
Quebec	30,089	31,081	32,043	34,724	32,373
Ontario	29,586	29,613	32,211	33,762	30,071
Manitoba	4,574	4,454	4,408	5,022	C
Alberta	7,940	8,676	10,027	C	C
Others	11,744	11,351	12,115	22,951	27,478
Canada	83,933	85,175	90,804	96,230	89,922

Note: C - Data is confidential and is reported in the others category.
Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5653.

Table 24
Domestic Consumption of Butter
('000 kilograms)

	1992/93	1993/94	1994/95	1995/96	1996/97
Opening Stocks	23,317	13,509	13,929	18,485	20,314
Production	83,933	85,175	90,602	96,230	89,922
Imports	175	1,036	356	2,362	2,909
Exports	10,075	2,290	1,036	14,574	15,567
Closing Stocks	13,509	13,929	18,485	20,314	24,613
Domestic Consumption	83,841	83,501	85,568	82,189	72,964

Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5632 & 5634.

Imports of butter have increased, in line with Canada's market access commitments under the WTO agreement. This import commitment will reach 3,274 tonnes of butter in 2000-01. In some years, especially in the nineties, exports have been comparatively high.

In 1996/97 exports of butter totalled approximately 15.6 million kilograms, of which 75 percent were directed to the North African and Russian markets. The Middle-East, South America and the Caribbean were other major destinations for Canadian butter.

k) Specialty Cheeses

Specialty cheeses have been and continue to be the success story of the Canadian dairy industry. Over the years, Canadians have been increasingly exposed to varieties of cheese other than the traditional cheddar cheese and demand for these specialty cheeses has increased. The strongest increase in the specialty cheese market was observed for Mozzarella cheese, which is often used in processing such as in the pizza industry.

Canada has a tariff rate quota for cheese, the majority of which is imported as specialty cheese although some cheddar cheese and processed cheese is also imported. Most of this in-quota quantity is allocated to the European Union.

Table 25
Production of Specialty Cheese by Province
('000 kilograms)

	1992/93	1993/94	1994/95	1995/96	1996/97
Quebec	91,472	95,096	94,051	97,410	110,213
Ontario	48,725	47,977	52,865	52,877	50,492
Alberta	5,616	4,252	3,769	4,375	3,954
Other	11,762	11,983	14,217	14,801	15,429
Canada	157,575	159,308	164,902	169,463	180,088

Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5656.

Quebec is the largest producer of specialty cheese in Canada largely as a result of its decision to increase specialty cheese production instead of butter production.

Table 26
Domestic Consumption of Specialty Cheese
('000 kilograms)

	1992/93	1993/94	1994/95	1995/96	1996/97
Opening Stocks	11,592	12,590	11,338	12,036	10,887
Production	157,575	159,308	164,446	169,463	180,088
Imports	16,673	16,436	15,970	15,234	17,826
Exports	4,675	2,663	4,242	6,928	8,560
Closing Stocks	12,590	11,338	12,036	10,887	12,599
Domestic Consumption	168,575	174,333	175,476	178,919	187,641

Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5633 & 5635.

l) Cheddar Cheese

Cheddar cheese was the traditional cheese in Canada. Canada has well-established export markets for old cheddar, especially to the United Kingdom and the United States. The stocks of cheddar cheese are higher than those of specialty cheese because of the ageing of cheddar cheese.

Table 27
Production of Cheddar Cheese by Province
('000 kilograms)

	1992/93	1993/94	1994/95	1995/96	1996/97
Quebec	55,068	65,141	61,424	63,006	58,057
Ontario	29,702	32,816	31,774	32,889	40,674
Manitoba	5,209	6,350	6,978	6,159	6,667
Alberta	5,535	5,070	C	C	C
Others	9,478	9,648	14,350	15,944	17,316
Canada	104,992	119,025	114,526	117,998	122,534

Note: C - Data is confidential and is reported in the others category.
Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5655.

The domestic demand for cheddar cheese has increased significantly in the eighties but appears to have levelled off somewhat.

Table 28
Domestic Consumption of Cheddar Cheese
('000 kilograms)

	1992/93	1993/94	1994/95	1995/96	1996/97
Opening Stocks	35,503	30,499	33,092	32,931	28,335
Production	104,992	119,025	114,531	117,998	122,534
Imports	549	1,227	1,158	923	2,572
Exports	6,319	5,331	5,880	5,209	8,973
Closing Stocks	30,499	33,092	32,931	28,335	34,585
Domestic Consumption	104,226	112,328	109,965	118,308	109,883

Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5633 & 5635.

m) Processed Cheese

A large part of cheddar cheese is used in manufacturing processed cheese. Agriculture and Agri-Food Canada estimates that 66 percent[8] of all cheddar cheese production is used in processed cheese. Processed cheese includes cheese spreads and cheese slices. Table 29 shows domestic consumption of processed cheese for the five dairy years ended 1996/97.

Table 29
Domestic Consumption of Processed Cheese
('000 kilograms)

	1992/93	1993/94	1994/95	1995/96	1996/97
Opening Stocks	5,296	6,306	6,261	7,629	6,429
Production	77,792	76,003	76,067	74,657	76,300
Imports	2,978	2,589	3,506	3,256	2,537
Exports	108	144	418	346	2,553
Closing Stocks	6,306	6,261	7,629	6,429	5,284
Domestic Consumption	79,652	78,493	77,787	78,389	77,430

Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5632 & 5634.

n) Skim Milk Powder

Skim milk powder is typically produced as a by-product of butter. Raw milk contains both butterfat and solids-non-fat, in fairly stable relations. Since butter is produced by extracting butterfat, what remains contains the solids-non-fat, mostly skim milk powder. A hectolitre of standard milk containing 3.6 kilograms of butterfat, can produce 4.365 kilograms of butter and 8.51 kilograms of skim milk powder. These are the numbers used for the setting of support prices. The actual numbers may vary and no industrial standard is agreed upon.

From the time supply management came into being, domestic self-sufficiency levels were determined on the basis of butterfat needed to meet domestic demand. Since production of butter determined to a large degree the quantities of skim milk powder to be produced, this product was produced independent of domestic demand. As it turned out, production of skim milk powder was in excess of domestic demand and this structural surplus was exported.

8. Dairy Market Review, P. 40. AAFC July 1997.

Table 30
Production of Skim Milk Powder by Province
('000 kilograms)

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Quebec	30,861	16,784	17,428	22,184	23,868	16,801
Ontario	9,945	11,920	13,680	17,473	19,418	18,451
Other	22,227	21,815	23,566	27,475	27,515	26,610
Canada	63,033	50,519	54,674	67,132	70,801	61,862

Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5659.

Skim milk powder not needed to meet domestic demand can be sold to the CDC. The CDC then exports these surpluses. Over the years, exports have decreased as the production of skim milk powder decreased. Skim milk powder is often used as an input in other prepared foods, and can also be used as an animal feed input.

Table 31
Domestic Consumption of Skim Milk Powder
('000 kilograms)

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Opening Stocks	36,731	8,736	13,659	15,924	13,449	16,127
Production	63,033	50,519	54,674	67,132	70,801	61,862
Imports	234	1,704	6,909	4,107	2,979	1,149
Exports	61,023	15,963	25,826	41,870	39,290	28,063
Closing Stocks	8,736	13,659	15,924	13,449	16,127	22,860
Domestic Consumption	30,239	31,337	33,494	31,844	31,812	28,215

Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5638, 5659 & 5667.

o) Unsweetened Concentrated Milk

This product is what used to be called evaporated whole milk. During 1996-97, Canada exported approximately 36.6 million kilograms of evaporated milk mainly to the North African market. Sweetened concentrated milk is also produced but Statistics Canada information is only available since 1990/91 when 6,944 tonnes were produced.

Table 32
Domestic Consumption of Concentrated Whole Milk
('000 kilograms)

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Opening Stocks	10,479	2,504	9,937	4,003	3,678	5,324
Production	50,174	48,250	47,203	56,854	56,280	71,299
Imports	148	132	75	59	35	909
Exports	13,923	72	4,923	9,845	20,761	36,632
Closing Stocks	2,504	9,937	4,003	3,678	5,324	10,210
Domestic Consumption	44,374	40,877	48,289	47,393	33,908	30,690

Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5636 & 5666.

5. Further Processing Industry[9]

Not all dairy products are used directly by consumers. Large quantities are used as an ingredient by food processors. For instance, Mozzarella cheese is used extensively by pizza makers and is the most expensive ingredient in pizza.

The further processing industry, as far as its importance to the dairy industry is concerned, consists of two segments. The first segment is not subject to import competition. The second segment competes directly with imports.

In August 1995, the CDC, in its role as administrator of policies adopted by the CMSMC, introduced Class 5 pricing to enable processors, exporters and further processors, who use dairy ingredients and who must sell their products in direct competition with foreign products, to remain competitive in the domestic and international markets. Currently, approximately 8 percent of the national MSQ is provided under the lower prices of Class 5 (see Table 33).

9. Source: CDC, CMSMC Reports.

Table 33
Utilization in Special Classes 5a, 5b, 5c - 1996/97
(millions of hectolitres of butterfat)

	Class 5a	Class 5b	Class 5c	Total
Cheddar	0.3201			0.3201
Cream Cheese	0.0691			0.0691
Mozzarella	0.4035			0.4035
Other Cheese	0.2443			0.2443
Butter, Butteroil		1.1561	0.0290	1.1850
Cream		0.3225	0.0099	0.3324
Evaporated Milk		0.0002		0.0002
Skim Milk Cond.		0.0015	0.0013	0.0028
Skim Milk Liquid		0.0105		0.0150
Skim Milk Powder		0.0103	0.0130	0.0233
Whole Milk Cond.			0.0955	0.0955
Whole Milk Liquid		0.0106	0.1913	0.2019
Whole Milk Powder.		0.0137	0.1059	0.1196
Yoghurt		0.0010		0.0010
Total	1.2346	1.5264	0.7459	3.5069

Source: Canadian Dairy Commission, CMSMC report September 25-26, 1997.

In the domestic market, manufacturers of food products, such as bakeries, confectioners, and frozen pizza manufacturers, which require the use of dairy ingredients, are eligible for access to lower-priced milk through the Class 5 permit system. The lower-priced milk is sold to a dairy processor by provincial milk boards based on a permit number issued to a further processor by the CDC.

In 1996-97, an equivalent of 3.5 million hectolitres of milk was used by further processors under annual permits. About 532 companies used their permits to purchase butter and butteroil for bakery and fresh pastry products, as well as dairy products such as cream and cheddar, mozzarella and cream cheeses to manufacture a variety of finished products. Of the 532 companies, 160 used Permits 5a, 401 used permits 5b, and 30 used Permits 5c. A further 48 companies obtained permits which allowed them to purchase whole milk, and butteroil, as well as condensed and powdered milk for use in confectionery products.

The following table illustrates what the further processing industry looks like as far as use of dairy ingredients is concerned. It also shows which products are most widely used in the further processing industry. The information is based on commitments by dairy ingredient based on permits issued. It typically overestimates the subsequent actual use of ingredients but it is nevertheless an indication of the interest that companies show in this activity.

Table 34
Commitments by Dairy Ingredient Based on Permits Issued
1996-97 Dairy Year
('000 kilograms)

	Pizzas	Pastas	Entrees	Soups and sauces	Bakeries	Total
Class 5a						
Cheddar	125.5	1,781.1	117.4	226.7	169.7	3,213.4
Cream cheese		5.2	26.7	2.3	1,208.0	9,117.9
Mozzarella	5,377.4	1,150.9	101.8	9.7	68.2	7,077.0
Other Cheeses	150.3	2,025.7	460.8	623.0	169.1	4,336.7
Class 5b						
Butter		40.7	163.0	279.4	5,834.7	6,865.4
Butteroil				1.2	2.6	5.3
Cream	.3	237.8	97.0	1,779.7	1,240.3	3,549.7
Evaporated. Milk					1.5	1.5
Skim Milk cond				99.3	3,606.8	3,706.1
Skim Milk liquid		38.9	75.0	2,973.8	1,205.1	4,349.5
Skim Milk powder.	39.7	275.4	49.1	507.8	1,272.3	2,895.4
Whole Milk cond				74.1	10.0	84.1
Whole Milk liquid		380.3	133.8	442.1	46.2	1,135.6
Whole Milk powder		.2	6.3	34.0	27.3	92.8
Yoghurt			1.6	1.8	128.7	193.9

Note: Total may not add because a category "others" was omitted.
Source: CMSMC meeting September 25-26, 1996.

Frozen pizza producers use large quantities of Mozzarella cheese. Other products used extensively are cheddar cheese and other cheeses by pasta producers. Significant amounts of cream are used by soups and sauces manufacturers who also use liquid milk.

Butteroil is used in the production of soups and sauces and by bakeries. Bakeries are mainly users of butter, cream and liquid milk.

Confectioneries, on the other hand, use mainly whole milk in various forms, butter and butteroil are also used as ingredients. Table 35 shows the commitments for Class 5c by dairy ingredient. Eligible finished products include chocolate bars, and candies. The table shows the quantities of products that further processors intend to use, and those quantities expressed in hectolitres of milk required to make that product. For instance, to produce 517,038 kilograms of butter, 118,451 hectolitres of standard raw milk is required.

Table 35
Commitments by Dairy Ingredient
1995-96 Dairy Year

Class 5c	'000 kilograms	Hectolitre
Butter	517.0	118,451
Butteroil	989.5	274,862
Cream	155.9	9,714
Evaporated Milk	17.2	357
Skim Milk Powder	3,020.6	9,968
Skim Milk Condensed	752.5	1,279
Whole Milk Liquid	16,054.0	160,540
Whole Milk Powder	1,632.7	141,976
Whole Milk Condensed	4,342.8	99,015

Source: CMSMC meeting, September 25-26, 1996.

Classes 5d and 5e are not part of the Canadian further processing industry. Class 5d is used for specific negotiated exports including cheese quotas to the United States and the United Kingdom. Permits for Class 5d also include structural surplus of skim milk powder established by the CMSMC. Class 5e is used for surplus removal. Permits for classes 5d and 5e are for export only and are issued to eligible exporters, processors, or to the CDC on a transaction by transaction basis.

Appendix I - Calculation of Target Returns and Support Prices

As of February 1, 1998

Guaranteed Market Revenue to Processors

(butter support price x butter per hectolitre of milk) + (skim milk powder support price x quantity of skim milk powder per hectolitre of milk)

= ($5.3927/kg x 4.365 kg/hL) + ($4.431/kg x 8.51kg/hL
= $61.25 per hectolitre

Producer Revenue = Revenue from Marketplace + Federal Dairy Subsidy

Producer Revenue from the Market place	=	Guaranteed Market Revenue to Processors less Processor Margin less Butter Carrying Charges
	=	$61.25/hL - $8.31/hL - $0.07/hL
	=	$52.87/hL
Federal Subsidy	=	$3.04/hL
Producer Revenue	=	$52.87+ $3.04/hL
	=	$55.91/hL

Notes:

Skim milk Powder and butter are joint products. From 1 hectolitre of milk, 4.364 kg of butter and 8.51 kg of skim milk powder can be produced.

The processor margin covers the cost of transforming milk into butter and skim milk powder and a return on investment for the processors.

Producer revenue return includes a shortfall adjustment for producers that compensates them for the insufficient price adjustment that occurred when the federal subsidy was first reduced.

Appendix II - Selected Tables of Dairy Producers and Processors

Table 1
Total Farm Sales of Milk by Province
('000 litres)

Province	1992	1993	1994	1995	1996
NFLD	60,171	40,911	30,065	30,655	30,329
P.E.I.	94,167	96,125	93,972	95,392	94,620
N.S.	166,317	163,992	164,060	170,389	168,990
N.B.	119,770	117,748	114,495	122,345	124,233
Quebec	2,592,968	2,580,814	2,672,903	2,763,646	2,729,758
Ontario	2,328,599	2,259,059	2,351,967	2,382,718	2,391,689
Manitoba	277,316	266,871	281,205	280,839	274,387
Sask.	211,340	198,998	201,667	206,777	197,942
Alberta	572,217	543,009	571,208	572,929	594,590
B.C.	480,550	513,547	555,348	572,721	566,552
Canada	6,903,415	6,781,074	7,036,890	7,198,411	7,173,090

Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5650.

Table 2
Production of Selected Dairy Products
('000 kilograms)

Product	1992	1993	1994	1995	1996
Ice Cream	147,266	157,749	172,267	169,321	165,545
Yoghurt	87,791	92,565	95,412	95,190	100,090
Specialty Cheese	154,104	159,768	162,527	172,137	173,107
Cheddar Cheese	109,799	110,742	119,359	116,868	115,562
Processed Cheese	75,839	77,806	74,765	76,422	75,827
Butter	85,129	83,557	88,342	92,515	93,174
Skim Milk Powder	53,489	55,016	59,480	71,073	66,589
Concentrated Whole Milk	51,348	48,115	46,364	53,000	61,747

Note: Ice cream converted to kilograms from litres (1kgm = 2litres).
Source: Statistics Canada and Agriculture and Agri-Food Canada.

Table 3
Production of Ice Cream
('000 litres)

	1992	1993	1994	1995	1996
Hard Ice Cream	276,698	298,844	327,058	316,651	315,691
Soft Ice Cream	17,835	16,654	17,477	21,991	15,399
Total Ice Cream	294,533	315,498	344,535	338,642	331,090

Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5660.

Table 4
Production of Hard Ice Cream by Province
('000 litres)

Province	1992	1993	1994	1995	1996
Quebec	51,142	55,160	61,991	63,739	55,011
Ontario	117,446	131,589	144,321	137,994	147,762
Manitoba	15,392	16,154	16,555	16,096	13,456
Alberta	24,679	29,207	34,402	C	C
B.C.	29,585	30,184	31,945	C	C
Others	38,454	36,550	37,844	98,822	99,462
Canada	276,698	298,844	327,058	316,651	315,691

Note: C - Data is confidential and is reported in the others category.
Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5660.

Table 5
Production of Soft Ice Cream by Province
('000 litres)

Province	1992	1993	1994	1995	1996
Quebec	5,372	3,484	3,283	11,727	6,999
Ontario	1,995	2,393	2,561	2,806	1,589
Manitoba	1,689	1,768	1,838	1,893	1,906
Alberta	2,231	2,757	3,265	C	C
B.C.	3,970	4,067	4,210	C	C
Others	2,578	2,185	2,320	5,565	4,905
Canada	17,835	16,654	17,477	21,991	15,399

Note: C - Data is confidential and is reported in the others category.
Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5660.

Table 6
Domestic Consumption of Ice Cream
('000 litres)

Province	1992	1993	1994	1995	1996
Production	294,533	315,498	344,535	338,642	331,090
Imports	934	975	942	834	991
Exports	1,307	487	1,146	8,224	10,481
Domestic Consumption	294,160	315,986	344,331	331,252	321,600

Note: Closing and Opening Stocks are assumed to be nil.
Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrices 5633 & 5635.

Table 7
Production of Ice Cream Mix by Province
('000 litres)

Province	1992	1993	1994	1995	1996
Quebec	32,478	38,098	39,082	40,422	33,091
Ontario	57,368	64,389	70,538	69,610	73,596
Manitoba	8,694	9,122	9,363	9,443	8,396
Alberta	13,781	16,384	19,309	12,023	11,810
B.C.	17,574	17,943	18,915	18,521	21,664
Others	19,308	18,274	18,372	22,077	16,506
Canada	149,203	164,210	175,579	172,096	165,063

Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5657.

Table 8
Production of Yoghurt by Province
('000 kilograms)

Province	1992	1993	1994	1995	1996
Quebec	38,604	44,262	42,751	44,053	47,993
Ontario	31,222	34,248	31,804	29,499	31,728
B.C.	9,070	9,442	9,037	9,142	6,814
Others	8,895	4,613	11,820	12,496	13,555
Canada	87,791	92,565	95,412	95,190	100,090

Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5665.

Table 9
Domestic Consumption of Yoghurt
('000 kilograms)

Province	1992	1993	1994	1995	1996
Production	87,791	92,565	95,412	95,190	100,090
Imports	518	587	380	300	224
Exports	55	108	109	139	155
Domestic Consumption	88,254	93,044	95,683	95,351	100,166

Note: Closing and Opening Stocks are assumed to be nil.
Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5665.

Table 10
Butter Production by Province
('000 kilograms)

Province	1992	1993	1994	1995	1996
Quebec	31,258	30,629	31,739	33,283	32,160
Ontario	29,151	29,243	31,305	31,987	33,564
Manitoba	4,841	4,428	4,412	4,758	4,829
Alberta	8,390	7,430	9,675	9,850	C
Others	11,489	11,827	11,211	12,635	22,851
Canada	85,129	83,557	88,342	92,513	93,404

Note: C - Data is confidential and is reported in the others category.
Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5653.

Table 11
Domestic Consumption of Butter
('000 kilograms)

Province	1992	1993	1994	1995	1996
Opening Stocks	15,557	10,294	5,469	8,369	14,282
Production	85,129	83,557	88,342	92,515	93,174
Imports	182	919	408	547	2,473
Exports	10,569	3,695	2,280	5,705	14,786
Closing Stocks	10,294	5,469	8,369	14,282	12,521
Domestic Consumption	80,005	85,606	83,570	81,444	82,622

Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5634 & 5632.

Table 12
Production of Specialty Cheese, Canada and Provinces
('000 kilograms)

Province	1992	1993	1994	1995	1996
Quebec	87,132	95,036	95,422	100,873	102,294
Ontario	50,349	47,136	50,901	52,738	51,561
Alberta	5,318	5,482	4,008	3,541	4,534
Others	11,305	12,114	12,196	14,982	14,721
Canada	154,104	159,768	162,527	172,135	173,110

Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5656.

Table 13
Domestic Consumption of Specialty Cheeses
('000 kilograms)

Province	1992	1993	1994	1995	1996
Opening Stocks	9,796	10,179	10,902	9,642	11,137
Production	154,104	159,768	162,589	172,135	173,110
Imports	16,745	16,847	16,436	16,037	17,118
Exports	5,045	2,671	2,663	6,509	6,745
Closing Stocks	10,179	10,902	9,642	11,137	11,626
Domestic Consumption	165,421	173,221	177,622	167,855	182,994

Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5633 & 5635.

Table 14
Production of Cheddar Cheese by Province
('000 kilograms)

Province	1992	1993	1994	1995	1996
Quebec	55,242	61,325	63,724	62,911	59,886
Ontario	31,870	29,473	34,151	31,404	34,317
Manitoba	5,183	5,172	6,964	7,061	5,846
Alberta	5,933	5,944	4,720	C	C
Others	11,571	8,828	9,800	15,492	15,513
Canada	109,799	110,742	119,359	116,868	115,562

Note: C - Data is confidential and is reported in the others category.
Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5655.

Table 15
Domestic Consumption of Cheddar Cheese
('000 kilograms)

Province	1992	1993	1994	1995	1996
Opening Stocks	32,273	30,896	26,843	30,579	28,333
Production	109,799	110,742	119,359	116,869	115,562
Imports	503	683	1,307	1,132	1,762
Exports	7,731	6,198	4,221	5,312	7,859
Closing Stocks	30,896	26,843	30,579	28,333	27,320
Domestic Consumption	103,948	109,280	112,709	114,935	110,478

Source: Source Statistics Canada and Agriculture and Agri-Food Canada Matrix, 5633 & 5635.

Table 16
Domestic Consumption of Processed Cheese
('000 kilograms)

Province	1992	1993	1994	1995	1996
Opening Stocks	6,281	5,766	8,274	5,538	5,011
Production	75,839	77,806	74,765	76,422	75,827
Imports	2,789	2,632	3,050	3,780	2,690
Exports	78	131	193	445	368
Closing Stocks	5,766	8,274	5,538	5,011	6,624
Domestic Consumption	79,065	77,799	80,358	80,284	76,536

Source: Statistics Canada.

Table 17
Production of Skim Milk Powder by Province
('000 kilograms)

Province	1992	1993	1994	1995	1996
Quebec	22,127	16,784	18,825	24,566	18,303
Ontario	9,215	12,824	14,861	18,746	19,331
Others	22,147	25,408	25,794	27,761	26,959
Canada	53,489	55,016	59,480	71,073	64,593

Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5659.

Table 18
Domestic Consumption of Skim Milk Powder
('000 kilograms)

Province	1992	1993	1994	1995	1996
Opening Stocks	15,262	5,528	9,045	10,201	12,293
Production	53,489	55,016	59,480	71,073	64,593
Imports	731	4,655	6,467	1,947	3,062
Exports	34,052	19,001	32,720	40,154	40,077
Closing Stocks	5,528	9,045	10,201	12,293	7,137
Domestic Consumption	29,902	37,153	32,071	30,774	32,734

Source: Statistics Canada and Agriculture and Agri-Food Canada, Matrix 5638, 5659 & 5667.

Table 19
Domestic Consumption of Concentrated Whole Milk
('000 kilograms)

Province	1992	1993	1994	1995	1996
Opening Stocks	2,957	3,831	3,403	1,538	3,568
Production	51,348	48,115	46,364	53,000	61,747
Imports	135	100	59	52	896
Exports	6,288	4,986	4,926	9,842	23,814
Closing Stocks	3,831	3,403	1,538	3,568	7,500
Domestic Consumption	44,321	43,657	43,362	41,180	34,897

Appendix III - Glossary

Anhydrous Butter Oil: the product obtained from butter or cream and resulting from the removal of practically the entire water and solids-non-fat content, and shall contain not less than 99.8 percent milk fat, and not more than 0.1 percent water.

Butter: creamy fat food product obtained from the churning of cream from milk. It contains not less than 80% milk fat and may contain: milk solids, bacterial cultures, salt and permitted food colour.

Buttermilk: as sold in Canada is actually cultured low-fat milk and is not necessarily a by-product of butter making.

Butter oil (Clarified Butter): the product prepared from butter or cream and resulting from the removal of most of the water and solids-non-fat content, and shall contain not less than 99.3 percent milk fat and not more than 0.5 percent water.

Calorie-reduced butter: conforms to the standards for butter except that it contains not more than 39 percent milk fat and not more than 50 percent of the calories that would normally be present in the product if it were not calorie-reduced. It may also contain some added emulsifiers, stabilizers and preservatives.

Cereal Cream: usually refers to cream that has a butterfat content of 10 percent. It is known in some provinces as “half and half” and in others as “ Coffee Cream”.

Cheddar Cheese: the product made by coagulating milk, milk products or a combination thereof with the aid of bacteria to form a curd and subjecting the curd to the cheddar process or any other process other than the cheddar process that produces a cheese having the same physical, chemical and organoleptic properties as those of cheese produced by the cheddar process. It contains not more than 39 percent moisture and not less than 31 percent milk fat and may contain salt, bacterial cultures to aid in the further ripening, colour and other permitted agents. Cheddar is the principal cheese used to make process cheese.

Cottage Cheese: the product, in the form of discrete curd particles, prepared from skim milk, evaporated skim milk or skim milk powder and harmless acid-producing bacterial cultures, and may contain milk, cream, milk powder, rennet and other ingredients. It contains not more than 80 percent moisture and 0.5 percent stabilizing agents. The data includes both creamed and uncreamed cottage cheese.

Dairy Farm Cash Receipts: Revenues from milk sales. Dairy subsidy may or may not be included.

Edible casein: main protein of milk. Dry product obtained by separating, washing and drying coagulum of skimmed milk, here the coagulum is obtained by precipitating with food grade acid.

Evaporated milk: a liquid product, obtained by the partial removal of water only, from skimmed milk.

Evaporated skimmed milk: a liquid product, obtained by the partial removal of water only, from skimmed milk.

Fluid milk: milk used for the production of liquid dairy products such as skim milk, 2% milk, 1% milk, homogenized milk (3.25% of fat) and long life Ultra High Temperature (UHT) Milk, as well as products such as table cream and whipping cream.

Fluid milk quota: a quota that is held by a dairy farmer that is part of a provincially controlled quota. The quota is used by the province to ensure the daily production of fresh milk for supplying the fluid milk market.

Hectolitre: One hectolitre is equal to 100 litres.

Ice Cream: the food made from the whipping and freezing of ice cream mix. The product shall contain not less than 36% solids, of which 10% are milk fat, or, where cocoa or chocolate syrup, fruits, nuts or confections have been added, 8% milk fat. Ice cream shall contain at least 180 grams of solids per litre of which amount not less than 50 grams shall be milk fat, or, where cocoa or chocolate syrup, fruits, nuts or confections have been added, 180 grams of solids per litre of which amount not less than 40 grams shall be milk fat.

Ice cream mix: the unfrozen pasteurized combination of cream, milk or other products, sweetened with permitted sweetening agents and does not contain less than 36 percent total solids of which 8 percent are milk fat.

Industrial Milk: milk used for the production of non-fluid milk dairy products such as cheese, butter, ice cream.

Lactose: milk sugar produced commercially from whey.

Malted milk: product made by combining milk with the liquid separated from a mash of ground barley malt and meal and, on the removal of water, containing more than 50% dairy content by weight.

Market Sharing Quota: a quota that is held by a dairy farmer that is part of the total Canadian industrial milk quota. It gives the farmer the right to produce that amount on his farm every year. Milk produced under this quota is used for processed dairy products such as butter and cheese.

Milk Powder: a product obtained by the removal of water only, from milk, party-skimmed milk or skimmed milk.

Pooling: Pooling in the context of dairy policy refers to pooling of producers' revenues.

Processed cheese: processed cheese or processed cheese spreads are made by grinding, mixing, melting and emulsifying with the aid of heat and emulsifying agents of some or more varieties of cheese with a selection of ingredients or additives.

Sherbet: the frozen food, other than ice cream, light ice cream, ice milk or frozen dairy desert, made from a milk product and may contain: water, permitted sweetening agents, fruits or fruit juices, a flavouring preparation, permitted food additives and up to one percent of casein and shall contain: not more than 5 percent milk solids including milk fat and not less than 0.35% acid determined by titration and expressed as lactic acid.

Skimmed sweetened condensed milk: a product obtained by the partial removal of water only from skimmed milk, with the addition of sugars.

Specialty cheese: all those varieties of cheese other than cheddar, cottage and processed cheese.

Support Prices: Support prices for butter and skim milk powder are prices that the CDC pays to processors of butter and skim milk powder should the domestic market not be able to immediately absorb all or parts of the production. They act as a floor price in the market place although, because of limitations on the quantities purchased by the CDC, their importance is not as strong as it once was.

Sweetened condensed milk: a product obtained by the partial removal of water only from milk, with the addition of sugars.

Table cream: usually refers to cream that has a butterfat content of 18 percent.

Target Price: The level of return determined to be adequate by the CDC for efficient milk producers to cover their cash costs and to receive a fair return on their labour and investment related to the production of milk sold for industrial purposes.

Water ice: a flavoured/coloured frozen sugar and water confection containing no or very low dairy content.

Whey: the liquid part of milk that remains after the separation of curd in cheese making.

Whey butter: butter that has been made from milk fat that has been recovered from whey.

Whey powder: a product obtained by the removal of water only, from whey.

Yoghurt: coagulated milk product obtained by lactic acid fermentation through the action of Lactobacillus bulgaricus and Streptococcus thermophilus from milk and milk products. The micro-organisms in the final product must be viable and abundant.

Appendix IV - Conversion Factors for Dairy Products

Product	% Butterfat	Litres of Milk Required to Produce 1kilogram
Anhydrous Butteroil	99.8	27.72
Butteroil	99.3	27.58
Butter	81.0	22.7
Cheddar Cheese	34.0	10.68
Cream Cheese	32.0	10.01
Condensed Milk	8.0	2.23
WholeMilk Powder	27.0	7.78
SkimMilk Powder		10.68
Casein		38.89
CottageCheese (curd)		6.80
Whey Powder		19.42

Weight Conversion Rates by Volume

Commodity	Unit	Litres per unit	Kilograms per unit
Whole milk	gallon	4.5	4.67
Skim milk	gallon	4.5	4.71
Cream	gallon	4.5	4.53
Dairy products	metric tonne	2,204.6	1,000
Milk	hectolitre	100	
Milk	kilolitre	1000	