FARM COMMODITY PRICE SPREAD STUDIES

INDIVIDUAL COMMODITIES - INCOME, EXPENDITURE AND CONSUMPTION

The commodities studied were selected on the basis of their importance to primary producers and consumers in general across Canada, or in particular localities. The importance of these commodities is set out here in relation to farm income, consumer expenditures, and per capita consumption of all foods.

Table 1 shows income from the sale of selected agricultural commodities as percentage of total cash income from the sale of farm products. The commodities (or commodity groups) listed are those for which individual commodity studies were carried out. It should be noted, however, that the commodity studies frequently had to be restricted to only one class or grade. Over the period 1949-57, the commodities and commodity groups listed in Table 1 accounted for 83.4% of total cash income from farm products. Some of this, of course, represented sales that were destined for export. Of the whole group, wheat has been the largest single contributor to farm income, followed by cattle and calves, dairy products, hogs, and poultry and eggs. These major commodities accounted for 77.2% of total cash farm income. The remainder of 6.2% represented income from the sale of potatoes, vegetables, fruits, sugar beets, and maple products. If we exclude income from those vegetables and fruit that were not included in our commodity studies, then farm cash income of the latter group will drop to less than 4%.

The importance of selected commodities to consumers can be indicated by referring to Tables 2 and 3.

Table 2 illustrates the distribution of the food dollar spent by an urban family on food consumed at home.[1] Among the food products purchased by consumers are those which were included in the commodity studies conducted by the Commission. These are indicated by capital letters in Table 2. The selected products accounted for an average of about 57% of food expenditures for the four surveys. Their importance increases considerably when compared with expenditure on food of Canadian farm origin. Our estimates show that over the period 1949-57, the expenditures on selected products represented about 72% of total expenditure on food consumed at home, and being of Canadian farm origin.

Commodities which accounted for major portions of farm income accounted also for major portions of consumer expenditures on food, but their order of importance changed. Table 2 shows that over the period under study, families allocated their expenditure on major groups of food in relatively stable proportions, spending 24.7% on meat, 17.7% on dairy products, 8.1% on poultry and eggs, 12.6% on cereals and bakery products, 9.4% on vegetables, 8.7% on fruit, 0.7% on frozen foods, 13.9% on general groceries, 1.6% on fats and oils, and 2.6% on fish.

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1 Food purchased and eaten away from home is not included in these estimates.

Table 3 shows that over the period 1949-57, average annual per capita consumption of selected products, as measured at retail, has been about 1,055 pounds. This represented 74% of total food consumed per person annually. In terms of quantity consumed, fluid milk and cream have taken first place, followed by potatoes, wheat flour, meats, refined sugar, etc.

The averages of farm income, food expenditure, and per capita consumption as shown in Tables 1, 2 and 3 differ to some extent from those given in Part V of Volume II of the Report. The main reason is the difference in the length of the period taken for calculation of these estimates. The estimates presented in Tables 1, 2 and 3 referred to here are all based on the same period, 1949-57, whereas in Volume II different time periods are taken for the individual commodities.

TABLE 1. INCOME OF SELECTED AGRICULTURAL COMMODITIES AS PER CENT OF TOTAL CASH INCOME FROM FARM PRODUCTS, CANADA, 1949 TO 1957

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1949-57 Average
					(per cent)					
Cattle and Calves	17.0	22.7	19.7	13.8	14.1	16.5	18.4	17.1	18.7	17.4
Hogs	12.1	13.4	12.2	11.8	10.7	13.5	12.3	11.3	11.3	12.0
Dairy Products	15.1	16.0	13.9	14.9	14.9	18.0	18.7	16.4	17.9	16.0
Poultry and Eggs	7.5	7.8	8.9	8.6	9.7	11.0	12.0	11.1	10.7	9.7
Wheat	28.3	18.0	25.0	26.3	28.0	17.7	15.2	19.8	17.7	22.1
Potatoes	1.4	1.4	1.0	2.3	1.1	1.2	1.4	1.6	1.5	1.5
Vegetables	1.9	2.0	2.0	2.4	2.2	2.4	2.5	2.2	2.7	2.3
Fruits	1.5	1.6	1.3	1.5	1.7	2.0	1.7	1.4	1.6	1.6
Sugar Beets	.4	.6	.6	.5	.5	.5	.6	.5	.6	.5
Maple Products	.3	.3	.2	.3	.2	.3	.3	.3	.3	.3
Total	85.5	83.8	84.8	82.4	83.1	83.1	83.1	81.7	83.0	83.4

Source: D.B.S., Handbook of Agricultural Statistics, Part II, Farm Income, 1926-57, Reference Paper No. 25, and Farm Cash Income, 1958.

TABLE 2. AVERAGE URBAN FAMILY FOOD EXPENDITURES, CANADA, 1948/49, 1953, 1955 AND 1957[a] (PATTERNS OF THE DISTRIBUTION OF THE FOOD DOLLAR ON FOOD CONSUMED AT HOME).

	1948/49	1953	1955	1957	4-Year Average
			(per cent)		
Meats	25.2	24.4	24.0	25.2	24.7
BEEF	10.3	11.2	11.2	11.4	11.0
PORK	8.6	8.0	7.3	7.8	7.9
Other	6.3	5.2	5.5	6.0	5.8
Dairy Products	18.3	17.3	17.2	17.8	17.7
FRESH MILK, Cream and Buttermilk	10.0	9.1	9.2	10.0	9.6
CANNED and Powdered Milk	.8	.8	.7	.9	.8
CHEESE, All Kinds	1.4	1.9	1.9	1.9	1.8
BUTTER	5.9	4.7	4.6	4.3	4.9
Ice Cream	.2	.8	.8	.7	.6
Poultry and Eggs	8.1	8.3	8.0	8.3	8.1
POULTRY[b]	3.2	3.7	3.7	4.3	3.7
EGGS	4.9	4.6	4.3	4.0	4.4
Cereals and Bakery Products	11.7	12.5	11.8	14.2	12.6
FLOUR	.9	.6	.6	.5	.7
BREAD	5.3	4.8	4.7	5.7	5.1
Breakfast Cereals	.8	1.4	1.1	.9	1.0
Other Bakery and Cereal Products	4.7	5.7	5.4	7.1	5.8
Vegetables	10.1	8.9	10.1	8.6	9.4
POTATOES	2.2	1.7	1.9	1.5	1.8
Tomatoes	1.1	1.0	1.1	.9	1.0
Other Fresh Vegetables	3.6	3.5	3.9	3.6	3.7
CANNED TOMATOES[c]	.9	.3	.4	.3	.5
CANNED PEAS	.7	.6	.6	.5	.6
Other Canned and Dried Vegetables	1.6	1.8	2.2	1.8	1.8
Fruit	10.5	8.4	8.3	7.8	8.7
APPLES	1.4	1.2	1.2	1.1	1.2
Other Fresh Fruit	6.1	4.6	4.5	4.1	4.8
CANNED PEACHES	.6	.5	.5	.3	.5
Canned Fruit Juice	.8	.8	.7	.9	.8
Other Canned and Dried Fruit	1.6	1.3	1.4	1.4	1.4

TABLE 2. AVERAGE URBAN FAMILY FOOD EXPENDITURES, CANADA, 1948/49, 1953, 1955 AND 1957[a] (PATTERNS OF THE DISTRIBUTION OF THE FOOD DOLLAR ON FOOD CONSUMED AT HOME). (Cont'd.)

	1948/49	1953	1955	1957	4-Year Average
			(per cent)		
Frozen Foods	n.a.	.5	1.1	1.0	.7
Frozen Fruit	-	.3	.5	.5	.3
Frozen Vegetables	-	.2	.3	.3	.2
Other Frozen Foods[d]	-	-	.3	.2	.2
General Groceries	11.2	15.2	15.6	13.5	13.9
SUGAR	2.2	1.5	1.2	1.5	1.6
Soup	1.4	1.3	1.4	1.4	1.4
Baby Food)	7.6	.6	.9	.9	10.9
Other Groceries)		11.8	12.1	9.7	
Fats and Oils[e]	2.0	1.8	1.7	1.2	1.6
Margarine)	2.0	.9	.7	.5	1.6
Other Fats and Oils)		.9	1.0	.7	
FISH	2.9	2.7	2.2	2.4	2.6
Total Food Consumed at Home	100.0	100.0	100.0	100.0	100.0

a Adapted from D.B.S., Urban Family Food Expenditure Surveys for 1948/49, 1953, 1955 and 1957.

b 1948/49 Survey takes poultry and game together.

c For 1948/49 includes tomato juice; in later years tomato juice is included with other canned and dried vegetables.

d 1957 Survey excludes frozen fish; in that year frozen fish are included with fish, and amount to 0.3% of total food consumed at home.

e Excluding butter, which is included with dairy products.

TABLE 3. APPARENT DOMESTIC DISAPPEARANCE OF SELECTED FOOD PRODUCTS OF AGRICULTURAL ORIGIN, CANADA, 1949 TO 1957[a]

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1949-57 Average
	(pounds per capita)									
Meats										
Beef - Carcass Wt.	59.2	53.3	53.1	56.7	66.9	72.6	71.9	74.6	77.8	65.1
Pork - Carcass Wt.	54.6	54.9	58.6	56.0	48.7	45.4	49.2	49.5	46.2	51.5
Dairy Products										
Fluid Milk & Cream - Retail Wt.	412.4	411.6	405.6	391.3	394.3	392.2	386.6	395.1	390.5	397.7
Evaporated Milk - Retail Wt.	14.8	17.5	17.9	18.3	18.5	18.0	18.4	18.6	18.3	17.8
Process Cheese - Retail Wt.	2.6	2.3	2.1	2.8	3.0	2.9	2.7	2.8	2.7	2.7
Butter, Creamery - Retail Wt.	19.6	20.2	19.2	19.0	19.2	19.2	19.2	19.5	19.4	19.4
Poultry & Eggs										
Poultry - Retail Wt. Eviscerated	15.8	16.1	18.0	21.7	19.8	21.7	24.3	25.6	25.9	21.0
Eggs (All Grades) - Fresh Egg Equivalent	29.0	30.0	30.0	33.3	34.4	35.9	36.0	36.5	38.1	33.7

TABLE 3. APPARENT DOMESTIC DISAPPEARANCE OF SELECTED FOOD PRODUCTS OF AGRICULTURAL ORIGIN, CANADA, 1949 TO 1957[a] (Cont'd.)

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1949-57 Average
					(pounds per capita)					
Cereals & Bakery Products										
Wheat, Flour - Retail Wt.	149.4	156.0	152.3	149.0	145.5	148.1	142.1	143.3	138.5	147.1
Vegetables										
Potatoes[b] - Retail Wt.	153.2	182.0	125.6	149.7	166.0	134.3	147.9	160.3	144.7	151.5
Canned Tomatoes - Net Wt. Canned	4.8	7.0	6.9	6.1	6.0	6.7	5.7	6.2	5.7	6.1
Canned Peas - Net Wt. Canned	7.3	6.8	6.7	6.6	6.5	6.4	7.1	7.0	7.4	6.9
Frozen Peas - Retail Wt.	.3	.3	.4	.5	.7	.8	1.4	1.7	1.8	.9
Canned Corn - Net Wt. Canned	4.9	5.0	5.5	4.7	5.1	5.0	4.9	5.2	5.2	5.1

a Fish are not included in this table; the average annual per capita consumption over the 1949-57 period was 13.5 pounds.

b Crop Year.

TABLE 3. APPARENT DOMESTIC DISAPPEARANCE OF SELECTED FOOD PRODUCTS OF AGRICULTURAL ORIGIN, CANADA, 1949 TO 1957[a] (Cont'd.)

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1949-57 Average
	(pounds per capita)									
Fruit										
Fresh Apples[b] - Retail Wt.	28.1	27.7	25.2	22.5	21.5	23.0	32.8	21.6	24.1	25.1
Strawberries, Processed (Canned & Frozen) - Retail Wt.	.5	.5	.6	.9	1.0	.9	1.0	1.2	1.2	.9
Canned Peaches - Net Wt. Canned	3.2	3.7	3.5	3.4	4.0	3.9	3.8	4.1	3.4	3.7
Special Products										
Refined Sugar - Refined Wt.	99.5	101.1	96.3	97.7	96.6	96.3	99.0	99.3	93.6	97.7
Maple Syrup - Retail Wt.	1.4	1.8	1.4	1.9	.6	1.2	1.0	1.2	1.5	1.3
Total for Products Listed	1,060.6	1,097.8	1,028.9	1,042.1	1,058.3	1,034.5	1,055.3	1,073.0	1,046.0	1,055.2

Source: Dominion Bureau of Statistics, Agriculture Division.

BEEF

Price Spreads on Beef Produced and Sold in Canada, and the Main Marketing Influences Thereon

1. Characteristics of Cattle and Beef Affecting their Price and Cost of Marketing

Beef cattle leave the farm, ranch or feedlot alive, and usually by truck in the first instance except for farm kill, for farm use and peddling.[1] They may continue by truck or rail transport to a country auction, packing plant, public stockyards or to the United States or to a Canadian port for overseas export. Where cattle are marketed by rail, they are usually picked up by truck at the farm and transported to the loading station. Sometimes, particularly in western Canada, cattle are driven on the hoof to the railroad shipping point.

Since most cattle are purchased on a delivered basis, the expense of transporting the livestock from the farm is a direct charge against the farmer. The weight ticket may be issued at a country point, an auction, a public stockyard, or a packing plant. Therefore, there is also part of the costs of shrinkage and bruising in transit to be borne by the producer.

There are now about 112 cattle auctions operating at country points in Canada - about 68 in eastern Canada and about 44 in western Canada.[2] In 1948 there were less than 20 altogether. Figures are not available on the volume of sales at these community auctions, but it has increased rapidly. Livestock sold at country auction move on to a public stockyard for resale or to a packing plant or back to the country for feeding or to export.

Of cattle sales in 1957, (other than at country auction for feeding)[1] about 63% were offered on public stockyards, about 32% were delivered directly from the country to packing plants, and the remaining 5% went directly for export. In a general way, the pattern of prices is established at the 11 public stockyards - the bulk of the cattle

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1 Farm-Consumed Cattle, Canada 1948-57, thousand head

1948	1949	1950	1951	1952	1953	1954	1955	1956	1957
141.6	115.3	104.4	81.7	93.4	121.5	144.1	143.8	144.1	158.6

Source: D.B.S. estimates.

2 Not including one-day auction sales such as 4H Calf Club sales.

3 Unless the rail shipment of such feeder cattle happens to stop at a public stockyard on through billing from one province to another.

are offered for sale there, all of the regular buyers are represented there, and official stockyard market reports are issued. Prices determined at country auction and for direct deliveries are related to these stockyard quotations. There has been a slight decline in recent years, however, in the proportion of cattle sold through public stockyards, and so the influence of the stockyards on price setting may have lessened. Since 1950, all of the public stockyards except Toronto have adopted the auction method of selling cattle.

The buyers of beef cattle represent several interests - inspected packing plants, approved abattoirs, local butchers, feeder buyers (farm and feedlot operators) and U.S. importers. At the largest public stockyard, Toronto, during the first part of the week when receipts are heaviest, there are approximately 25 actual cattle buyers in the cattle alleys. On this market only limited numbers of slaughter cattle are bought on order, i.e., purchased for shipment to packing plants in eastern Canada or in the United States. On the other hand, a large number of feeder cattle (including calves) are sold each year on the Toronto market and shipped to numerous feedlots throughout Ontario. Some feedlot operators and farmers come in to select their requirements, but the bulk of the 100,000 feeders are purchased on order.

At a large western market like Calgary a sizeable percentage of the slaughter cattle are purchased for shipment either to the west coast, eastern Canada or to the United States. Packing plants from the south, west and the east place orders to buy with either the commission firms or the order buyers operating on the market. Whereas, in Toronto, the individual buyer generally represents one specific firm, in Calgary an order buyer may be actually purchasing for several different packers.

Beef cattle are usually marketed when they approximate a certain weight and degree of finish. There is some latitude with respect to the finish for slaughter cattle, but heavy steers (over 1,150 pounds) and heavy heifers (over 900 pounds) may be sharply discounted in price. The bulk of the cows are marketed at the end of the milk-production or grazing season. Bull marketings are heaviest in summer and autumn. Feeder cattle move to market towards the end of the grazing season. Occasionally, during periods of heavy marketings, the producer has to hold cattle back from delivery to stockyards and packing plants.

Live cattle are not graded officially; the estimated yield and official carcass grade are the main factors in establishing the price of a particular animal. Daily price quotations are reported on the public stockyards for four unofficial grades of steers and heifers - Choice, Good, Medium and Common - and for four unofficial grades of cows - Good, Medium, Common, Canners and Cutters.

Beef cattle, excluding feeders, are usually slaughtered within a few days of leaving the farm. Occasionally, the slaughtering is done by one firm and the cutting and processing by another. Beef goes from the packer to retailer mostly as carcasses, although there is a trend towards more cutting in the abattoir.

There is a quickening interest in the sale of cattle on the basis of dressed weight and official rail grade, particularly for the top two grades of cattle. The number of sales so handled has been increasing. For example, the buyer may agree to pay $ X per cwt. alive with the seller guaranteeing that the cattle will yield Y per cent carcass weight and officially grade all Red Brand (Choice).

The Health of Animals Division of the Canada Department of Agriculture provides a free meat inspection service at packing plants that are under federal inspection. There are 56 inspected plants across the country. All edible meat and meat products from these plants carry the legend mark indicating that they have been prepared according to federal requirements.

The Livestock Division of the Canada Department of Agriculture also provides a free beef grading service. Official graders are available at each plant under federal inspection to grade (upon request by the packer) beef carcasses. Since 1929, all beef slaughtered at inspected plants has been graded in accordance with the federal grades. The official grades for beef carcasses, their description in terms of equivalent live animal, and the percentage of total inspected slaughterings falling in each grade in 1949 and 1958 are shown in Table 1.

The bulk of the beef sold in fresh form over the retail counter comes from the top four carcass grades - Choice, Good, Standard, and Commercial Classes 1 and 2. In addition, nearly all of the Utility Classes 1 and 2 are also sold unprocessed. Virtually all of the Manufacturing and Bull grades of beef are merchandised in processed form (canned meats, bologna, frankfurters etc.)

There has been a shift over the last decade towards a higher proportion of Choice (i.e., Red Brand) and Good (i.e., Blue Brand) carcasses. In 1949, Red and Blue carcasses combined accounted for about 18.7% of inspected slaughterings. In 1958, however, these two top grades of carcasses accounted for about 40.2% of inspected slaughterings.

Beef, like other fresh meat, is a perishable product unless chilled, frozen or processed. Meat men have an expression which points up the urgency in their operations - "You either sell it or smell it". Beef requires careful handling, and is subject to shrinkage (dehydration) and discoloration, as well as to deterioration. These characteristics call for either rapid turnover of fresh beef or else regulated refrigeration and careful packaging.[1] Safeway stores advertised it this way:[2]

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1 Mr. Thomas G. McCormack, president of Dominion Stores Ltd., has been reported (in Canadian Grocer, Dec. 20, 1958, p. 2) as saying that the average annual turnover of meat (in Supermarkets) is 175 times, compared with vegetables 225, frozen foods 45, groceries 30, and non-foods 13 times.

2 Advertisement in Winnipeg Free Press, Sat. Nov. 29, 1958, "Meat Dept. Manager Plays Key Role in Supermarket".

"The latest innovation in the handling of fresh meats gives a guarantee of refrigeration at all times. Direct from the Packers to a walk-in cooler, it moves next into a refrigerated cutting room. In this spotlessly clean area it is cut, trimmed, prepared and placed on platters and trays ready for wrapping. Next through a refrigerated trough to wrapping and weighing stations and finally to the refrigerated display case."

TABLE 1. OFFICIAL GRADES FOR BEEF CARCASSES, DESCRIPTION IN TERMS OF LIVE CATTLE, AND PROPORTION OF INSPECTED KILL IN EACH GRADE, CANADA, 1949 AND 1958.

Official Grade		Description in Terms of Live Cattle	% of Kill 1949	% of Kill 1958
Choice		Choice steers & heifers	6.4	24.1
Good		Good steers & heifers	12.3	16.1
Standard		Top Medium steers & heifers		9.0
Commercial	- Class 1	Low Medium steers & heifers	28.5	7.7
	- Class 2	Good & Medium young cows of beef type		1.8
	- Class 3	Carcasses overfat for above grades		0.3
Utility	- Class 1	Common steers, heifers & young cows	9.7	3.8
	- Class 2	Good & top Medium mature cows	11.9	10.7
	- Class 3	Low Medium & Common mature cows	9.6	8.3
Manufacturing		Cutter & Canner cows, "boner" steers & heifers	16.6	14.3
Bulls		Bulls	5.0	3.9
			100.0	100.0

Source: Canada Department of Agriculture, annual Livestock Market Review, Ottawa.

Under special circumstances, the tenderness of beef may improve with keeping, but enough shrinkage and waste result to limit this kind of beef to the luxury restaurant trade.

Beef is a heavy product and requires a lot of manhandling.

2. General Disposition of the Supply

Cattle numbers on farms and beef production and prices are characterized by a cyclical pattern of behaviour with an average cycle duration of about 12 years.[1] This is clearly visible in Chart 1. When cattle marketings are in their upward phase of the cycle, prices are in their downward phase, and vice versa. The Commission's decade of study 1949-58 does not comprise a full cycle and, therefore, comparisons and conclusions over this period must be made with great caution. The year 1957 marked the turning point from the upward phase of the last cattle population cycle to the downward phase of the next cycle. The preceding peak in numbers was in 1945, which means that the latest cycle has had a duration of about 12 years. The previous cattle population cycle extended over the 11-year period 1934-45.

In attempting to describe the general disposition of the supply of beef, it is necessary to include in the period of study at least the last full cattle population cycle. In order to say something reliable about trends in disposition at least the last two population cycles should be compared.[2] This is done in Table 2; the table contains comparable numbers of exported and domestically slaughtered cattle, dressed weight of slaughterings, imports, exports, and changes in stocks of beef, and beef consumption in Canada, for the last two cycles.[3]

There is another influence on beef prices and consumption which must be mentioned here - the substitutability of beef and pork in the consumer's food budget. When pork prices are low relative to beef prices, consumers tend to eat more pork and less beef, and when pork prices are high relative to beef, consumers tend to eat more beef and less pork. Since pork production and prices are also subject to cycles, this matter of substitutability of beef and pork is important.

Table 2 suggests that there has been an upward trend in the numbers of live beef cattle exported in the last 25 years. Although the increase in exports of young cattle has been prominent, there has been a more than compensating decline in exports of live cattle of over 700 pounds in weight. In other words, the total weight of live beef cattle exports has declined over the last two cattle population cycles.

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1 When cattle numbers on farms are lagged in comparison with average value per head over the last four decades, the closest inverse correlation results from an 11-year lag.

2 In view of the fact that the 1934-45 cycle included some years of drought, depression and war, it would be better to compare the last three cattle population cycles, but deficiencies in data make this unfeasible.

3 The first of these two cycles should begin with 1934, but the comparable figures for that year are not available. The omission is not serious, however, because the cattle population in 1935 was not much lower than in 1934.

CHART 1. NUMBER OF CATTLE AND CALVES ON FARMS IN CANADA AS AT JUNE 1ST, 1906 TO 1958

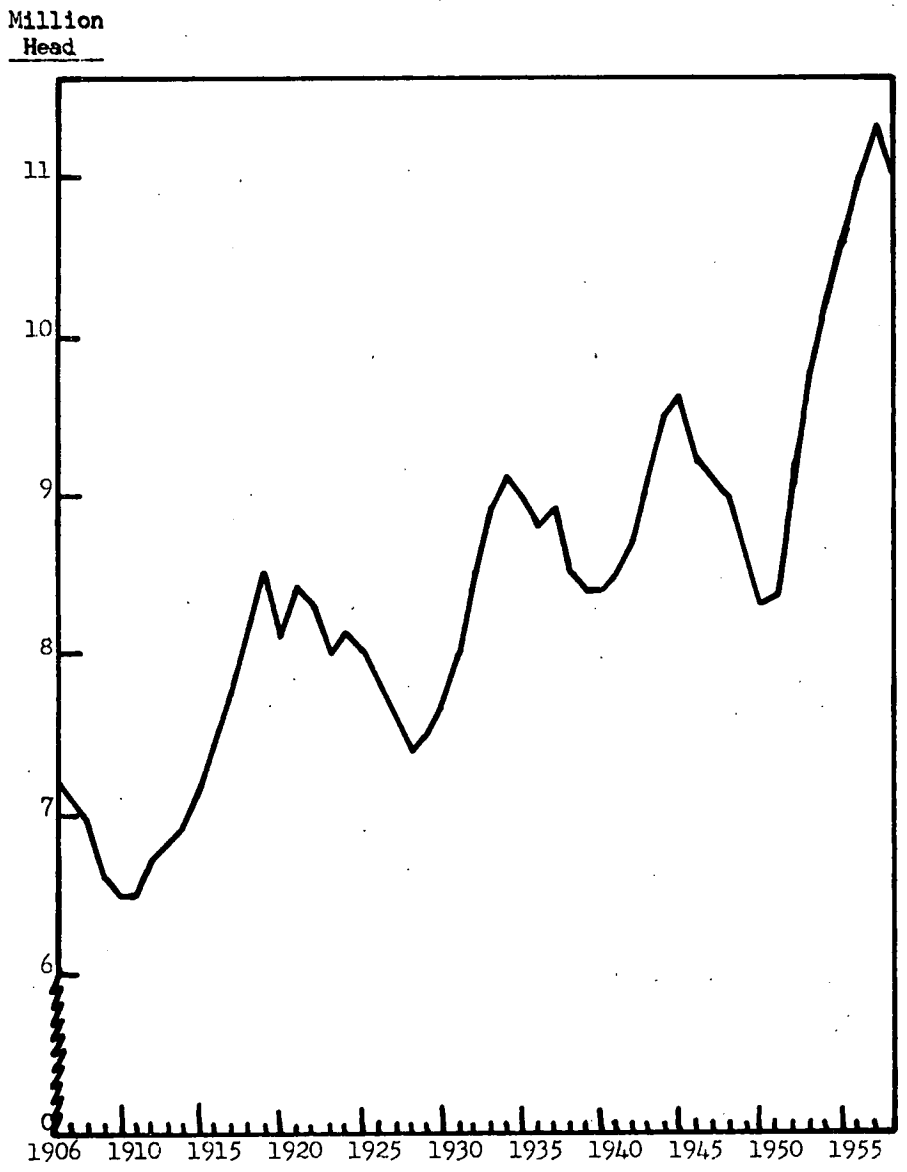

TABLE 2. BEEF SUPPLY AND DISPOSITION, CANADA 1935-57, AND COMPARISON OF TWO CATTLE POPULATION CYCLES, 1935-45[a] AND 1945-57

	Live Cattle Exports			Domestic Slaughter		Stocks of Beef[d]	
	Total Number	Number 200-700 lb.[b]	Number Over 700 lb.	Number of Cattle	Estimated Cold Dressed Weight[c] (thousand lbs.)	Beginning of Year (thousand lbs.)	End of Year (thousand lbs.)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1935	97,576	-	97,576[k]	1,274,700	595,395	22,858	21,976
1936	215,738	32,811	182,927	1,336,200	619,472	21,976	23,947
1937	203,724	27,746	175,978	1,397,900	623,122	23,947	25,302
1938	112,893	4,254	108,639	1,389,000	639,170	25,302	19,337
1939	189,268	5,481	183,787	1,337,200	615,620	19,337	29,639
1940	134,284	2,803	131,481	1,402,500	643,459	29,639	21,848
1941	163,442	5,769	157,673	1,515,500	723,739	21,848	32,209
1942	126,896	2,695	124,201	1,525,500	751,434	32,209	29,204
1943	3,120	377	2,743	1,585,600	789,605	29,204	35,637
1944	4,008	304	3,704	1,872,300	920,371	35,637	31,831
1945	5,863	355	5,508	2,400,600	1,142,540	31,831	40,842
Total	1,256,812	82,595	1,174,217	17,037,000	8,063,927	293,788	311,772
Average	114,256	8,260	106,747	1,548,818	733,084	26,708	28,343

a This production cycle should begin with 1934, but comparable data for that year are not available.
b From April 1936 through 1938, 175-200 lb.
c Less offal, but including beef used for canning.
d In cold storage, including frozen bone-in and boneless beef, unfrozen beef and fancy beef meat, and unfrozen cured and in-cure beef. Excludes frozen fancy meat after 1950, and canned beef.

TABLE 2. BEEF SUPPLY AND DISPOSITION, CANADA 1935-57, AND COMPARISON OF TWO CATTLE POPULATION CYCLES, 1935-45[a] AND 1945-57 (Cont'd.)

	Live Cattle Exports			Domestic Slaughter		Stocks of Beef[d]	
	Total Number	Number 200-700 lb.[b]	Number Over 700 lb.	Number of Cattle	Estimated Cold Dressed Weight[c] (thousand lbs.)	Beginning of Year (thousand lbs.)	End of Year (thousand lbs.)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1945	5,863	355	5,508	2,400,600	1,142,540	31,831	40,842
1946	6,201	715	5,486	2,215,900	1,059,644	40,842	30,642
1947	6,245	1,194	5,051	1,944,100	926,321	30,642	43,038
1948	313,778	71,382	242,396	1,939,400	910,363	43,038	35,313
1949	320,088	103,322	216,766	1,843,400	863,364	35,313	23,415
1950	362,446	159,253	203,193	1,673,500	787,741	23,415	22,174
1951	170,739	46,334	124,405	1,591,800	785,553	19,556	17,357
1952	6,930	2,251	4,679	1,719,400	864,000	17,357	29,385
1953	25,102	1,435	23,667	2,004,600	994,081	29,385	33,103
1954	52,671	3,630	49,041	2,222,300	1,078,927	33,103	23,648
1955	21,832	1,872	19,960	2,271,100	1,102,619	23,648	29,682
1956	4,222	1,271	2,951	2,441,200	1,182,517	29,682	33,251
1957	334,925	139,493	195,432	2,602,500	1,288,238	33,251	29,712
Total	1,631,042	532,507	1,098,535	26,869,800	12,985,908	391,063	391,562
Average	125,465	40,962	84,503	2,066,908	998,916	30,082	30,120

e Including small quantities of veal, but excluding canned beef.
f Cold dressed carcass equivalent weight. Conversion factor 1936-53, 2.17; 1954-57, 1.98.
g Excluding small exports of beef component of canned sausage, weiners etc.

TABLE 2. BEEF SUPPLY AND DISPOSITION, CANADA 1935-57, AND COMPARISON OF TWO CATTLE POPULATION CYCLES, 1935-45[a] AND 1945-57 (Cont'd.)

	Beef Imports and Exports			Beef Used for Canning[h]	Non-Civilian Disappearance of Beef[i]	Apparent Domestic Consumption Fresh & Canned[j]	Apparent Domestic Consumption per Capita
	Imports		Exports[g]				
	Beef[e] (thousand lbs.)	Canned Beef[f] (thousand lbs.)	Beef (thousand lbs.)	(thousand lbs.)	(thousand lbs.)	(thousand lbs.)	(lbs.)
	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1935	142	22,488[l]	13,794	1,002	-	605,113	55.80
1936	123	26,163	12,745	1,259	-	631,042	57.63
1937	93	25,378	17,654	1,524	-	629,584	57.00
1938	111	22,356	5,788	1,274	-	661,814	59.34
1939	320	32,208	4,515	1,972	-	633,331	56.21
1940	233	22,683	3,913	2,281	30,358	670,253	58.89
1941	1,509	15,685	7,905	5,779	43,565	722,667	62.80
1942	915	9,865	15,961	8,212	51,911	749,258	64.29
1943	375	12,239	13,549	5,993	63,418	782,237	66.32
1944	23	12,258	107,411	14,181	64,546	829,047	69.40
1945	2	1,416	194,754	116,302	63,896	940,193	77.88
Total	3,846	202,739	397,989	159,779	-	7,854,539	62.53
Average	350	18,431	36,181	14,525	-	714,049	-

h Included in cold dressed weight of slaughtered cattle.
i Excluding canned beef.
j Columns (5) + (6) - (7) + (8) + (9) - (10).
k Over one year old.
l Nine months only.

TABLE 2. BEEF SUPPLY AND DISPOSITION, CANADA 1935-57, AND COMPARISON OF TWO CATTLE POPULATION CYCLES, 1935-45[a] AND 1945-57 (Cont'd.)

	Beef Imports and Exports						
	Imports		Exports[g]	Beef Used for Canning[h]	Non-Civilian Disappearance of Beef[i]	Apparent Domestic Consumption Fresh & Canned[j]	Apparent Domestic Consumption per Capita
	Beef[e] (thousand lbs.)	Canned Beef[f] (thousand lbs.)	Beef (thousand lbs.)	(thousand lbs.)	(thousand lbs.)	(thousand lbs.)	(lbs.)
	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1945	2	1,416	194,754	116,302	63,896	940,193	77.88
1946	6	-	138,191	88,480	-	931,659	75.79
1947	8	738	50,952	49,580	-	863,719	68.82
1948	8	1,223	133,822	25,480	-	785,497	61.26
1949	7,163	20,159	106,903	17,415	-	795,681	59.17
1950	10,587	22,311	90,740	14,582	-	731,140	53.32
1951	11,891	41,073	96,910	11,701	-	743,806	53.09
1952	11,338	24,535	68,054	9,199	-	819,791	56.70
1953	13,924	17,928	28,819	9,651	-	993,396	66.92
1954	18,499	25,241	22,580	11,625	-	1,109,542	72.58
1955	19,829	25,775	12,787	18,197	-	1,129,402	71.95
1956	18,266	21,395	18,634	20,713	-	1,199,975	74.62
1957	21,974	31,871	55,312	18,177	-	1,290,310	77.78
Total	133,495	233,665	1,018,458	411,102	-	12,334,111	67.08
Average	10,269	17,974	78,343	31,623	-	948,778	-

Sources: Dominion Bureau of Statistics and Canada Department of Agriculture, Handbook of Agricultural Statistics Part IV, Food Consumption in Canada 1926-55 Reference Paper 25, Ottawa 1958, Table VI. D.B.S. Livestock and Animal Products Statistics, 1957, and Trade of Canada, annual.

Table 2 shows that there has been a definite upward trend in the number of cattle slaughtered domestically from an average annual cold carcass weight of 733 million pounds over the 1935-45 cattle population cycle to 999 million pounds over the 1945-57 cycle. Concurrently, there has been a slight upward trend in stocks of beef in cold storage in Canada.

Both exports and imports of fresh beef have increased prominently during the last 25 years. Imports of fresh beef have increased from an average annual figure of 350 thousand pounds (cold carcass weight) over the 1935-45 cattle cycle, to 10 million pounds over the 1945-57 cycle. Imports of canned beef have not increased during the period, however, and may have declined slightly. There has been, however, a marked increase in amount of beef slaughtered for canning - from an annual average of 15 million pounds (cold carcass weight) over the 1935-45 period to 32 million pounds over the 1945-57 period.

Exports of fresh beef increased from an annual average of 36 million pounds (cold carcass weight) over the 1935-45 cattle cycle to 78 million pounds over the 1945-57 cycle.

Most of our cattle and beef exports go to the United States, and most of our cattle and fresh beef imports come from the United States and New Zealand. Most of our canned beef imports come from Australia and Argentina.

In recent years the U.S. tariff on Canadian Slaughter and Feeder cattle, weighing 700 pounds and over, has been 1½¢ a pound on a 400,000-pound quota and 2½¢ a pound over the quota.[1] Canada has no quota on beef cattle imports from the United States, and our tariff is 1½¢ a pound. On beef cattle weighing 200-699 pounds, the U.S. tariff is 2½¢. Canada has the same import tariff as the United States on fresh and frozen beef - i.e., 3¢ a pound.[2] Canada has no duty on canned beef imports from Australia and New Zealand; otherwise, a British Preferential duty of 15% is in force and a Most Favoured Nation duty of 30%.

The net effect of the foregoing trade on the disposition of the supply of beef has been a substantial increase in domestic beef consumption, not only to supply the growing population of Canada, but also per capita. Table 2 shows that apparent domestic consumption of beef (fresh and canned) increased from an annual average of 714 million

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1 For a historical summary of U.S. tariffs on Canadian cattle see Canada Department of Agriculture, Livestock Market Review 1957, Ottawa, p. 31. Also see p. 3 of this publication.

2 Canada Department of Agriculture, Canada and the United States Tariffs on Selected Agricultural Products, Ottawa, March 1957, p. 5. Canada has a duty of 2¢ per lb. and free British Preferential on pickled beef, compared with 3¢ (minimum 20%) for the U.S. Canada has no duty on salted beef, compared with 3¢ (minimum 20%) for the U.S. The U.S. duty on edible offal averages slightly higher than Canada's 1¼¢ (minimum 6%). The U.S. duty on canned beef is 3¢ (minimum 20%).

pounds (cold carcass weight) over the 1935-45 cycle to 949 million pounds over the 1945-57 cycle. Concurrently, per capita beef consumption increased from an annual average of 62½ pounds to 67 pounds. United States figures for these two periods were 56.7 and 69.9 pounds per capita.[1] A warning must be issued against making invalid comparisons between years (e.g., 1951 and 1957) that are in different phases of the cattle cycle.

3. Stocks in Cold Storage

In keeping with the rising long-run trend in beef consumption, opening and closing stocks of beef increased from annual averages of 26.7 million pounds (opening) and 28.3 million pounds (closing) during the 1935-45 beef population cycle.

The foregoing data on stocks of beef comprise beef in cold storage (i.e., in packers' and wholesalers' warehouses), and include frozen bone-in and boneless beef, frozen fancy beef meats, unfrozen beef and fancy beef meats and cured and in-cure beef. ("Fancy" beef meats includes tongue, heart, liver, kidney, tripe, etc.) Canned beef is not included in the cold storage stocks data.

The amount of each category of beef in storage varies seasonally. The averages for the beginning of each quarter over the 1945-57 period are shown in Table 3. November-to-January is the peak storage season. The table also shows the proportions of the total beef in storage over the period accounted for by the different categories. During the fourth quarter of the year, frozen boneless beef accounts for about a third of all beef in cold storage, frozen bone-in beef accounts for about a quarter, frozen fancy meats for about 11%, unfrozen fresh beef and fancy beef meats for about 29%, and cured and in-cure (unfrozen) beef for about 2%. The foregoing figures refer to storage inventories and not to turnover. Unfrozen fresh beef has to turn over faster in storage than frozen or cured beef.

Boneless beef is produced mainly from canner and cutter cows and bulls, but in part, also from common steers and heifers. In terms of the national grades of beef, shown in Table 1, it includes Manufacturing, Bull and a small proportion of the Utility Classes 1 and 2.

Boneless beef and fancy meats are stored principally during the peak of the cattle run, October to December. Storage provides a means of taking these products off the market at this plentiful season for marketing later during the scarce season, particularly the summer months. Boneless beef is used principally in manufacturing bologna, sausage, frankfurters and other prepared and cooked meats.

Bone-in beef, coming usually from the top grades of cattle, may be stored at any season of the year. This frozen beef is used to

1 U.S.D.A. Agricultural Marketing Service, Supplement for 1956 to Consumption of Food in the United States 1909-52, Washington 1957, p. 13, and The National Food Situation, July 1958, p. 4.

fill orders for lumber, construction and mining camps, and for the boat trade. Bone-in beef, particularly loin and rib cuts, is also used by hotels, railway dining cars, restaurants, etc.

TABLE 3. STOCKS OF BEEF AND FANCY BEEF MEAT IN COLD STORAGE, FROZEN AND UNFROZEN, QUARTERLY OPENING AVERAGES, CANADA 1945-57.

(Thousands of Pounds)

	Jan. 1	Apr. 1	July 1	Oct. 1
I - FROZEN				
(a) Boneless Beef				
Annual Average	10,447	7,712	4,751	5,134
% of Total Stocks	33.07	29.65	23.53	21.39
(b) Bone-in Beef				
Annual Average	7,989	5,640	4,029	4,399
% of Total Stocks	25.29	21.68	19.96	18.33
(c) Fancy Meats				
Annual Average	3,405	2,775	2,291	2,682
% of Total Stocks	10.78	10.67	11.35	11.17
II - UNFROZEN				
(a) Fresh Beef and Fancy Meats				
Annual Average	9,116	9,221	8,574	11,224
% of Total Stocks	28.86	35.45	42.47	46.76
(b) Beef Cured and In-Cure				
Annual Average	630	662	544	566
% of Total Stocks	1.99	2.54	2.69	2.36
III - TOTAL BEEF MEAT IN COLD STORAGE				
Annual Average	31,587	26,010	20,189	24,004

Source: D.B.S. Stocks of Food Commodities in Cold Storage and Other Warehouses, Ottawa, annual.

4. Geographical Pattern of Production and Marketing

The relative importance of cash income from cattle and calves has increased from about 13% of total cash farm income from farm products during the period 1934-45 to almost 17% during 1945-57. Ontario

and Alberta are the most important producers of cattle and veal for market, followed by Saskatchewan, Quebec, Manitoba, British Columbia, Nova Scotia, New Brunswick and Prince Edward Island. This is shown in Table 4. The table also shows that the Maritime region has produced a declining proportion of Canada's cash income from the sale of cattle and calves over the last 25 years. Even Quebec's, Manitoba's and British Columbia's shares have fallen off slightly. Ontario's share increased slightly from 36.6% to 37.1%, comparing the two cattle cycles, 1934-45 and 1945-57. Alberta's share increased more notably over the period, and Saskatchewan's share also increased.

The importance of cattle and calves within the agriculture of individual provinces varies. Table 4 contains comparable data for the last two cattle cycles in order to indicate trends. The importance of cattle and calves within all provinces has been increasing, most notably in Alberta and Ontario. Among the provinces, cattle and calves are most important within Ontario's agriculture. Cash income from the sale of cattle and calves increased in Ontario from 16.5% of all Ontario cash farm income during 1934-45 to 21.8% during 1945-57.

In spite of the large production of beef in Ontario and Quebec, these central provinces are, because of their relatively dense populations, a deficit region. The Prairie Provinces, on the other hand, are surplus producers of quality beef. The surplus cattle and beef from the Prairie Provinces, therefore, move out to markets, mainly in the central provinces but also to the Atlantic Provinces, to British Columbia and to the United States. Many beef cattle are raised in the Prairie Provinces and then move eastwards, particularly to Ontario, as feeders for finishing on grain closer to the final market. Most feeder cattle shipped from western to eastern Canada have to be T.B.-tested en route. This involves some delay and extra expense in marketing.

About 62% of Canada's 154 slaughtering and meat packing establishments are located in Ontario and Quebec.[1] Meat packing establishments are mainly of two sizes - large ($1 million sales or over) and medium-small ($100,000 to $500,000 sales). About 75% of all establishments are incorporated companies, 12% are individually owned, 10% are partnerships, and less than 3% are co-operatives. Of course, there are many fewer meat packing firms than there are establishments (i.e., plants). In 1957, the big three (Canada Packers, Swifts and Burns) accounted for about 70% of total cattle slaughterings.

Alberta has become prominent as a cattle feeding area in recent years. A large volume of beef cattle are grain-finished in the feedlots located in the southern part of the province.[2]

In 1957, Alberta marketed 807,858 head of cattle, which was an increase of about 51% over the comparable year, 1945. The increase in

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1 D.B.S. Slaughtering and Meat Packing Industries, Ottawa, annual.

2 See Frank Jacobs "Alberta vs. Ontario Feeder, Who's Top Dog?", reprinted from Canadian Cattleman, 1957, in Farming Today, Massey-Ferguson, Toronto.

TABLE 4. RELATIVE IMPORTANCE OF THE PROVINCES IN MARKETING CATTLE, AND RELATIVE IMPORTANCE WITHIN THE AGRICULTURE OF EACH PROVINCE AND CANADA OF INCOME FROM CATTLE.

Province	Period	Cash Income from Cattle & Calves as % Canada Total Income from Cattle & Calves	Cash Income from Cattle & Calves as % All Cash Farm Income
Ontario	1934-45	36.6	16.5
	1945-57	37.1	21.8
Alberta	1934-45	17.3	12.4
	1945-57	19.3	18.8
Saskatchewan	1934-45	15.3	8.7
	1945-57	16.1	11.9
Quebec	1934-45	12.6	11.7
	1945-57	12.0	13.9
Manitoba	1934-45	9.5	12.9
	1945-57	8.4	15.9
British Columbia	1934-45	3.8	11.7
	1945-57	3.5	14.2
Nova Scotia	1934-45	2.0	12.5
	1945-57	1.5	16.5
New Brunswick	1934-45	1.9	12.3
	1945-57	1.3	12.5
Prince Edward Island	1934-45	0.9	12.1
	1945-57	0.8	14.7
CANADA	1934-45	100.0	12.6
	1945-57	100.0	16.7

Source: D.B.S. Handbook of Agricultural Statistics Part II, Farm Income - 1926-57, Ottawa 1958.

all Canadian marketings over this period was about 29%. Concurrently, there was in excess of a sixfold increase in direct cattle exports from Alberta, compared with less than a fivefold increase in cattle exports from Canada as a whole. The majority of beef cattle exports would be of Choice and Good quality. The rate of increase in cattle marketings and exports over the period was greater for the six southern crop districts of Alberta than for the province as a whole.

There are several reasons for this increase in cattle feeding in southern Alberta: (1) the climate allows the use of open, uncovered feedlots. Adequate shelter is provided by a windbreak around the feedlot; (2) the irrigated land produces a supply of roughage (hay, silage, beet tops and pulp, pea vine, etc.); (3) with the rapid increase in the domestic demand for Red and Blue Brand beef, there has been an increasingly greater demand for finished cattle; (4) there is a supply of top quality feeder cattle right at hand on the ranges of southern Alberta; (5) proximity to the Pacific Northwest (Seattle, Spokane, Tacoma, Portland) places southern Alberta within reach of the high-priced markets, in the United States; (6) possession of unmarketable grain gives them a cheap feed for finishing cattle. Stocks of wheat in particular have increased on Alberta farms in recent years, and more wheat has been used for feed.

With respect to the geographical pattern of beef storage over the last cattle cycle, 1945-57, Ontario accounted for 27% of beef in cold storage in Canada, compared with 23% in Quebec, 17% in Manitoba, 13% in Alberta, 11% in British Columbia, 6% in Saskatchewan, and 3% in the Maritime Provinces. The relative importance of beef storage in Ontario and Quebec increased over the period in contrast with a decreasing relative importance of beef storage in the Prairie Provinces and the Maritimes.

5. Seasonal Pattern of Cattle and Beef Prices

Beef cattle marketings have a distinct seasonal pattern which results in an inverse seasonal pattern of prices. Heaviest marketings are in the autumn, particularly November, and this is the season when cattle prices are lowest. Marketings fall off thereafter, reaching a minimum during the three-month period April-June, and this is the season when cattle prices are highest. This seasonal pattern of beef cattle prices over the last cattle population cycle is summarized in Table 5.

Monthly wholesale prices of beef are not available for Canada as a whole, but they are available for carcass steer beef by certain major cities. Table 6 summarizes this seasonal price pattern for Montreal, Toronto, Winnipeg, and Vancouver over the 1945-57 period. The season of peak wholesale prices for beef is mid-summer, and winter is the low season.

Monthly retail prices of beef as such are not published, but there are retail prices of six cuts of beef at specified cities, from which Canada retail prices could be calculated. Table 7 summarizes these seasonal price patterns for Canada.

A comparison of Tables 5, 6 and 7 reveals that wholesale and retail prices for beef follow a different seasonal pattern than beef cattle prices. Wholesale and retail beef prices are highest in summer and lowest during winter, whereas beef cattle prices are highest during spring and lowest in the autumn. This difference in price patterns has direct implications for the seasonal pattern of the farm-wholesale and

TABLE 5. MONTHLY PATTERN OF CATTLE PRICES ON PUBLIC STOCKYARDS, CANADA, AVERAGE 1934-45 AND 1945-57

($/cwt.)

Month	Average 1934-45	Average 1945-57
January	5.99	15.64
February	6.21	15.76
March	6.46	16.10
April	6.68	17.33
May	6.90	17.00
June	6.86	17.35
July	6.09	16.34
August	5.83	15.76
September	5.70	15.57
October	5.39	15.41
November	5.33	14.44
December	5.83	15.09

Source: Adapted from Canada Department of Agriculture Livestock Market Review, Ottawa, annual, using weighted average price for all cattle.

TABLE 6. MONTHLY PATTERNS OF WHOLESALE PRICES OF CARCASS STEER BEEF, COMMERCIAL QUALITY, MONTREAL, TORONTO, WINNIPEG AND VANCOUVER, AVERAGE 1945-57.

(Cents per Pound)

Month	Montreal	Toronto	Winnipeg	Vancouver
January	35	35	34	34
February	34	34	33	33
March	35	35	33	34
April	35	34	33	34
May	36	35	34	34
June	37	36	35	36
July	38	38	36	36
August	37	37	36	36
September	36	36	34	35
October	34	35	34	33
November	34	35	33	33
December	35	35	32	33

Source: Adapted from D.B.S. Quarterly Bulletin of Agricultural Statistics, Ottawa.

TABLE 7. MONTHLY PATTERNS OF RETAIL PRICES OF SIX CUTS OF BEEF, CANADA, AVERAGE 1949-57

(Cents per Pound)

Month	Hamburg	Blade Roast	Stewing Beef	Rolled Rib Roast	Round Steak	Sirloin Steak
January	45.6	54.7	55.1	76.1	78.2	82.4
February	45.7	55.6	55.7	76.8	78.4	82.8
March	45.3	55.4	55.4	76.4	77.3	81.7
April	44.9	55.3	55.3	76.2	77.3	81.8
May	45.1	55.6	55.6	76.9	78.7	83.2
June	45.6	56.3	56.3	78.1	80.4	85.2
July	46.5	56.9	57.1	79.2	82.0	87.1
August	47.1	57.0	57.4	79.8	83.3	88.6
September	46.7	56.7	57.3	80.0	83.0	88.7
October	46.5	56.3	56.9	79.0	81.2	86.7
November	45.3	54.9	55.4	79.0	77.6	82.7
December	44.9	54.8	55.3	76.4	77.6	82.4

Source: D.B.S. Prices and Price Indexes, Ottawa, monthly.

farm-retail price spreads. These price spreads usually are widest in summer and narrowest during winter and spring.

6. Patterns of Cattle and Beef Prices by Grades and Regions

Steers and heifers account for over half of the cattle sold on public stockyards and slaughtered for beef in Canada and for a still higher proportion of the fresh beef. As explained earlier, heifers and each weight class of steer are graded unofficially into Choice, Good, Medium and Common. Grade for grade, steers fetch the highest price among slaughter cattle. Over the last cattle population cycle 1945-57, the most frequent classes and grades of beef cattle marketed on public stockyards were Medium and Good steers of less than 1,000 pounds in weight, Good and Choice steers of more than 1,000 pounds in weight, and Medium heifers.

During the low phase of the cattle cycle (when prices are high), the proportion of cattle marketed coming within the steer and heifer classes as a whole falls. Over the longer run, however, there has been an increase in the proportion of cattle marketed as steers on public stockyards. This is reflected in an increase over the last 12 years in the proportion of inspected carcasses grading in the top Red and Blue Brands. The increased importance of steers for beef has been most pronounced in steers weighing over 1,000 pounds, and in the Choice grade of all steers and heifers.

Stockyard prices are available for the two weight classes and four grades of steers and heifers for 11 major city markets across

Canada. A study was made of trends and cyclical patterns in these class and grade prices over the last 25 years, comprising two cattle population cycles.

Over the period as a whole, of course, there was a general upward drift in cattle prices, mainly due to general inflation and an increasing demand for beef. The various prices for all classes and grades of cattle averaged higher over the 1945-57 cycle than over the 1934-45 cycle. This, in effect, is what has already been shown in summary form in Table 5. During the 1945-57 cycle, prices rose to a peak in 1951.

Regional comparisons among cattle prices reveal two things - the one expected, the other, perhaps, unexpected. First, beef cattle prices in the deficit area, Ontario and Quebec, have generally been higher than in the surplus Prairie area. For purposes of illustration, Montreal, Toronto, Winnipeg and Calgary prices of Medium steers (less than 1,000 pounds) and Medium heifers were averaged over the years 1945-57. These results are shown in Table 8.

TABLE 8. COMPARISON OF PRICES ON PUBLIC STOCKYARDS IN MONTREAL, TORONTO, WINNIPEG AND CALGARY FOR MEDIUM STEERS AND HEIFERS, AVERAGES OF YEARS 1945-57.

($/cwt.)

	Montreal	Toronto	Winnipeg	Calgary
Medium Steers (up to 1,000 lb.)	18.45	18.52	16.79	17.63
Medium Heifers	16.65	17.76	14.73	16.08

Source: Adapted from Canada Department of Agriculture Livestock Market Reports, Ottawa, annual.

Secondly, regional comparisons among cattle prices for the main fresh beef grades reveal contrasting long-run trends. Comparisons were made by grade for Choice, Good, Medium and Common steers and heifers. Again, Montreal, Toronto, Winnipeg and Calgary were chosen for illustrative purposes. In order to facilitate comparison, the prices over the 1934-57 period were converted to indexes based on the 1949 price equal to 100.

Comparing the last two cattle cycles as a whole, it was found that only for Toronto did prices for the Choice and Good grades tend to rise fastest. For Montreal, the prices of Medium steers and heifers rose fastest. In Calgary, the prices of Common steers rose fastest.

One can also consider the changes that have taken place in the

retail prices of various grades of beef. Unfortunately, data were available for the calculation of retail price indexes for certain cuts of beef only. Prices of hamburg, blade roast, stewing beef, rolled rib roast, round steak and sirloin steak are available for Canada. Unpublished prices of these cuts, excepting hamburg, are available for a dozen cities. The limited number of cuts made a full comparison with the findings on the long-run behaviour of beef cattle prices impossible. Nevertheless, since the retail prices have a bearing upon the farm-retail price spread calculations, which follow in a later section, they are presented here in Table 9 for Canada for the years 1949 to 1958.

Table 9 shows how prices of these six cuts of beef rank at retail - hamburg, blade roast, stewing beef, rolled rib roast, round steak and sirloin steak in ascending order. Also clearly shown is that prices reached a cyclical peak in 1951. Beef prices fell after 1951 up to 1954, but since then resumed their upward trend until 1958, when they began another cyclical upswing. The indexes of prices in Table 9 for Canada, indicate that, although sirloin steak prices did not rise exceptionally fast up to 1951, for the whole period sirloin steak prices have risen faster than for the other five cuts. Hamburg prices, on the other hand, rose exceptionally fast to 1951, but since 1954 hamburg prices have risen more slowly than for most of the other cuts.[1] The prices of blade roast and stewing beef, other less-expensive cuts, also rose relatively rapidly to 1951.

To sum up, during years when beef prices are rising rapidly in a cyclical upswing, the prices of the less-expensive cuts rise fastest. In other words, the price differential between the more- and less-expensive cuts narrows during an upswing in beef prices. During a cyclical downswing in beef prices, the price differential between the more- and less-expensive cuts widens. It will be shown in a later section that the farmer's share of the retail price of beef increased from 1949 to 1951 and subsequently decreased, at least to 1957. The implications of the present conclusion are that from 1949 to 1951 the farmer's share of the retail beef price increased fastest for the more-expensive cuts, and that subsequently up to 1957, the farmer's share decreased fastest for these more-expensive cuts.

7. The Price Spread Between Feeder and Slaughter Cattle

It is time now to consider certain successive marketing stages or components of the farm-retail price spread for beef. Although

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1 The Ontario Government Brief to the Commission also drew attention to "...the differential in retail prices widening between the higher and lower cuts in recent years". Submission of the Government of Ontario to the Royal Commission on Price Spreads of Food Products, Proceedings, p. 2660.

TABLE 9. COMPARISON OF RETAIL PRICES AND PRICE INDEXES OF SIX CUTS OF BEEF, CANADA, 1949 TO 1958

Year	Hamburg		Blade Roast		Stewing Beef		Rolled Rib Roast		Round Steak		Sirloin Steak	
	(¢/lb.)	(Index)	(¢/lb.)	(Index)	(¢/lb.)	(Index)	(¢/lb.)	(Index)	(¢/lb.)	(Index)	(¢/lb.)	(Index)
						Canada						
1949	37.9	100.0	48.4	100.0	46.6	100.0	67.1	100.0	67.0	100.0	70.4	100.0
1950	47.1	124.3	57.5	118.8	55.8	119.6	78.0	116.2	78.6	117.3	82.8	117.6
1951	67.6	178.3	73.2	151.3	72.4	155.3	94.3	140.5	95.8	142.9	101.0	143.5
1952	57.7	152.4	64.6	133.5	66.5	142.6	87.4	130.3	89.3	133.3	93.4	132.7
1953	43.8	115.7	51.4	106.2	53.7	115.2	75.1	111.9	75.1	112.0	79.6	113.0
1954	38.7	102.2	48.2	99.7	49.1	105.2	71.3	106.2	71.9	107.3	77.0	109.4
1955	38.0	100.3	49.2	101.7	49.3	105.8	72.2	107.6	73.6	109.9	80.0	113.6
1956	37.1	97.9	49.2	101.7	49.5	106.2	73.2	109.2	75.2	112.2	81.6	115.9
1957	37.9	100.2	52.0	107.6	52.6	112.7	75.9	113.1	77.9	116.3	84.3	119.7
1958	46.4	122.5	61.5	127.2	61.3	131.6	84.8	126.3	87.9	131.2	94.4	134.1

Source: Dominion Bureau of Statistics.

the beef price spread normally refers to the gross margin between the farm price of slaughter cattle and the retail price of fresh beef, the margin between feeder and slaughter cattle prices is the appropriate preliminary stage at which to begin a general consideration of the successive marketing components of the beef price spread.

In marketing beef cattle, the first commercial step really begins with the sale of grass-fed feeder cattle for finishing, i.e., grain feeding for fattening. Of course, some cattle feeders raise some or all of their own feeders. Although it cannot be overlooked that a large supply of beef in Canada still comes from dairy-type cattle and from retired dairy cows, this is less true of fresh beef which is our main concern here.

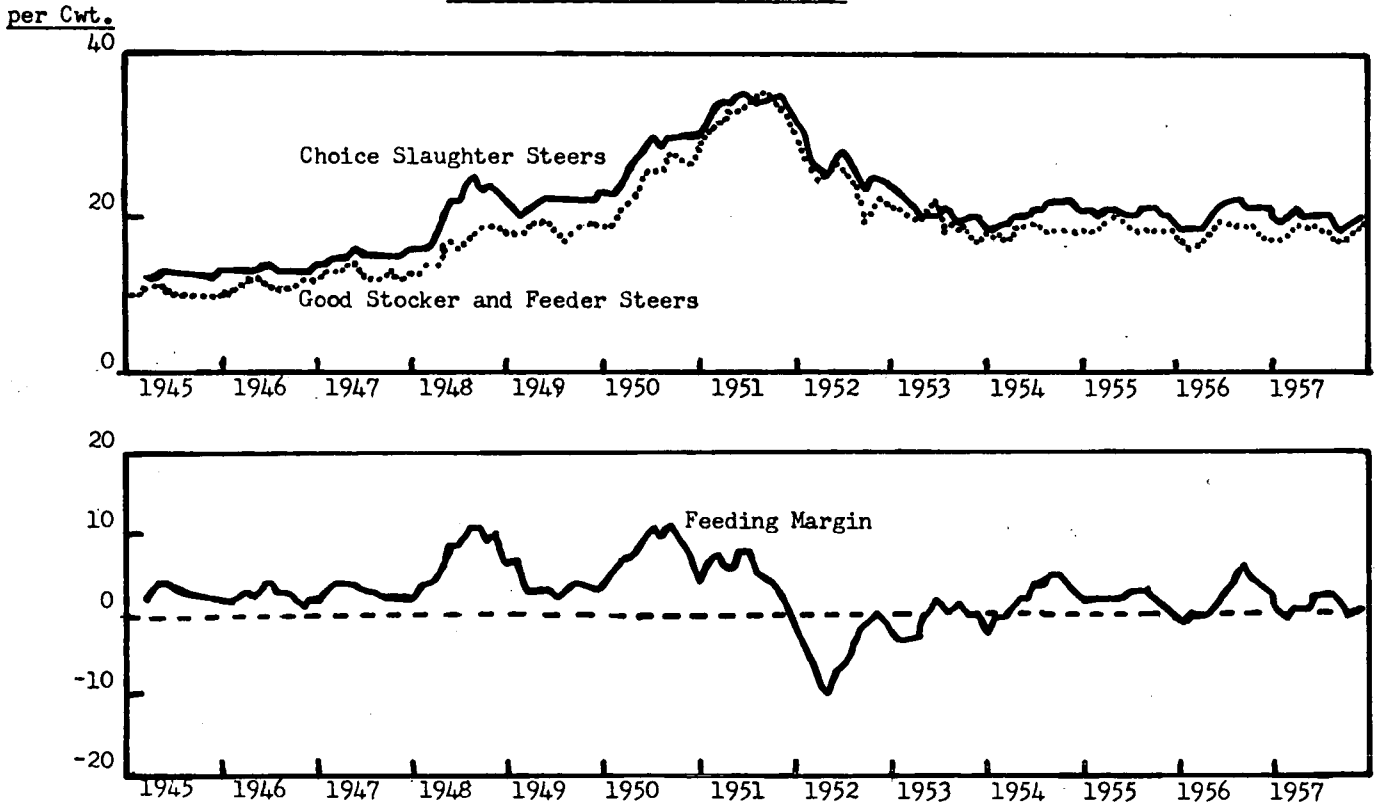
The producers of feeder cattle may sell them as calves, yearlings or heavy steers. Grazing conditions, feed grain prices, the expected price for slaughter cattle and also change in weight of animal are the major factors to be taken into consideration in deciding at what age to sell feeder cattle and how long to feed them.[1] Heavy steers may only need a few months on feed, but feeder calves may require up to a year. The finished cattle are sold for slaughtering through the same channels as feeder cattle, and incur similar expenses. The cost incurred by the farmer in transporting his cattle to the stockyards would make up the major part of the difference between a farm-gate price and the stockyard price. The transportation cost includes weight, shrinkage in transit, as well as direct shipping costs by road or rail. At the stockyards, there are the selling (or buying) commission and the yardage, feed, bedding etc. charges to be paid.

Since a large number of both feeder and slaughter cattle are sold through the Toronto stockyards, it was decided to use this market to illustrate the relationship between feeder and slaughter prices over the last cattle cycle, 1945-57. For this purpose, monthly comparisons were made between the prices of Choice slaughter steers (weighing up to 1,000 pounds) and the prices seven months earlier of good stocker and feeder steers. Seven months was assumed to be the average duration of the feeding period. Admittedly, this is rather too inflexible an assumption, but information was not available for introducing a more appropriate, variable time lag. The results are depicted in Chart 2.

In Chart 2 the long-run upward drift in cattle prices, already referred to, is clearly revealed, as well as the pronounced cyclical upswing in prices in the middle of the 1945-57 period. During the upswing of cattle prices (years 1948-51), the feeding margin was widest. The wide negative feeding margin during 1952 was mainly due to the foot-and-mouth epidemic. If 1952 is omitted, the feeding margin is still quite variable. In 1948, for example, it rose from about $2.00 per cwt. in January to over $11.00 in August and September, and then receded to nearly $7.00 in December. In 1951, the feeding margin averaged over $5.00 per cwt. In 1953, the feeding margin was negative. In 1955, the feeding

1 Beef Marketing Margins and Costs, U.S.D.A., Agricultural Marketing Service, Misc. Pub. 710, Washington 1956, p. 7.

CHART 2. FEEDER AND SLAUGHTER CATTLE PRICES AND FEEDING MARGIN, TORONTO, MONTHLY, 1945 TO 1957



margin averaged about $2.00.

8. The Price Spread Between Slaughter Cattle and Beef Carcasses at Wholesale

After feeder cattle are finished on grain and sold as slaughter cattle, the next steps in marketing are slaughtering the animals, dressing, and then wholesaling the carcass beef. It is usually assumed that 100 pounds of live cattle yields 53 pounds of warm carcass beef or 51 pounds of chilled carcass (head, feet and hide off, kidney out).[1] The shrinkage from warm to cold dressed weight is reckoned at 3%, plus 4½ pounds per carcass for head meat. The expected wholesale value of the dressed carcass, plus the value of by-products (hides, tallow, bones, oleo oil, casings, liver, heart, tongue, head meat etc.), in relation to costs of processing, largely determine what price the meat packer is prepared to pay for the live animal. Actually, of course,

> "The dressing percentage will vary materially, even within the same grade of livestock, depending on whether the animals have been weighed 'fed and watered' or empty; as between animals shipped or trucked long distances as compared to short hauls; as between those heavily coated with manure and clean cattle and as between dry animals and those soaked by heavy rains.
>
> Likewise, dressing percentages usually vary with the grade of the animals, as well as within any one grade. For instance, Choice and Good steers may yield from 52 per cent to 60 per cent of the live weights; Medium steers from 48 per cent to 54 per cent and Plain steers still lower; heifers usually average, grade for grade, slightly lower yields than steers; canner and cutter cows and steers may yield as low as 40 per cent to 45 per cent."[2]

Beef price spread calculations in the United States are based on an average carcass yield (Choice grade) of 58% of live weight and a retail yield of 80% of carcass weight.[3] (The 20% waste on carcass weight is composed of fat, bones, shrinkage etc.) These yields amount to 46.3 pounds of retail cuts from 100 pounds of live weight, or a live weight that is 2.16 times the retail weight.

It is interesting to note that the dressed weight of beef cattle in Canada has been increasing over the last 25 years, from an average of about 477 pounds per carcass over the 1935-45 cycle to about 493 pounds over the 1945-57 cycle. The weight of dressed carcasses

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1 Canada Department of Agriculture, Canada Weights, Measures and Conversion Factors for Agricultural Products, Ottawa 1954, p. 6.

2 Quotation from A Letter on Canadian Livestock Products, Meat Packers Council of Canada, Toronto, Nov.-Dec. 1958, p. 4.

3 Farm-Retail Spreads for Food Products, U.S.D.A., Agricultural Marketing Service, Misc. Pub. 741, Washington 1957, pp. 19, 77 and 103.

also increased during the last 13 years.[1] Comparison of live and cold dressed weights over the last 17 years suggests a slight upward trend in live-to-dressed yields, from a yield of about 51.7% during the upward phase of the previous cattle numbers cycle, to a yield of 52.6% during the upward phase of the last cattle cycle. The explanation for this might be the increasing proportion of beef-type cattle used for beef, and the improvements in animal nutrition. There was also a more substantial cyclical increase in yield within the last cattle numbers cycle with the yields during the downward phase (first half) of the cycle being lower than during the upward phase (latter half) of the cycle. Although carcass weights increased over the cycle, the live weights were greater during the first half than during the latter half. As far as the Commission's decade of study is concerned, the yields for the first two years, 1949 and 1950, averaged about 49.9% in contrast with the seven years, 1951 to 1957, when the yields averaged about 52.5%.

Wholesale prices are available only for Commercial quality steer carcasses for eight major cities and not for Canada as a whole. In order to illustrate the price spread between slaughter cattle and beef carcasses at wholesale, Toronto and Winnipeg markets were selected. Several rather arbitrary assumptions then had to be made. The grade of live slaughter cattle selected as being most comparable[2] to Commercial steer carcasses for illustrative purposes, was Low-Medium steers of up to 1,000 pounds in weight. Of course, Low-Medium steers of over 1,000 pounds also are comparable, and perhaps some Good and Common steers. The price of Low-Medium light steers was estimated by computing the lower third of the price range for Medium light steers. An average conversion factor of 50% from live to dressed carcass weight was applied, but with year-to-year variations in accordance with variations in the Canada average yield for all grades. An adjustment for the value of by-products was made by deducting from the live value an allowance for by-products. The slaughter-wholesale spreads derived are shown in Table 10. In view of the arbitrary assumptions made in this estimation, the accuracy of the results is questionable. The relative changes from year to year in the live-to-wholesale spread shown in Table 10 should be more reliable. The live-to-wholesale spread (corresponds closely to the meat packer's margin) appears during the last decade to have been widest in the year 1954, and narrowest in 1949. Further study of the live-to-wholesale beef price spread is also needed as a preliminary step before proceeding to estimate a wholesale-retail spread.

Retailers usually buy their beef in carcass form from meat packers or wholesalers. The retailer then trims off excess fat, bones, some cuts for roasts and stew beef, and grinds some beef into hamburger.

A U.S. study of the live-wholesale spread on Choice grade cattle for 1949-55 yielded the results shown in Table 11. The U.S. margins were more uniform from year to year and, in general, narrower than

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1 Beef cattle in the United States have been fed to heavier weights since the end of World War II. See The Livestock and Meat Situation, U.S.D.A., Agricultural Marketing Service, Washington, Nov. 1958, p. 2.

2 And most frequent.

TABLE 10. ESTIMATES OF PRICE SPREAD BETWEEN LOW-MEDIUM SLAUGHTER STEERS[a] AND COMMERCIAL CARCASSES AT WHOLESALE, TORONTO AND WINNIPEG, 1949-57.

Year	Wholesale Carcass Value (¢/lb.)	Equivalent Carcass Value of 1 lb. Live[b] (¢)	Estimated Live Value (¢/lb.)	Estimated Live Value of By-Products (¢/lb.)	Live Value Less By-Products (¢/lb.)	Live-Wholesale Spread (¢/lb. Live)
			Toronto			
1949	38	18.1	18.5	2.1	16.4	1.7
1950	47	22.7	22.2	2.7	19.5	3.2
1951	56	28.3	29.8	3.5	26.3	2.0
1952	47	23.9	22.5	2.1	20.4	3.5
1953	36	18.3	17.7	1.9	15.8	2.5
1954	34	17.0	15.2	1.9	13.3	3.7
1955	35	17.5	16.7	1.9	14.8	2.7
1956	34	17.3	17.2	1.8	15.4	1.9
1957	33	17.0	16.0	1.9	14.1	2.9
			Winnipeg			
1949	36	17.2	17.2	2.1	15.1	2.1
1950	44	21.3	20.7	2.7	18.0	1.3
1951	55	27.8	27.5	3.5	24.0	3.8
1952	47	23.9	21.3	2.1	19.2	4.7
1953	37	18.8	15.3	1.9	13.4	5.4
1954	36	18.0	14.5	1.9	12.6	5.4
1955	36	18.0	15.7	1.9	13.8	4.2
1956	31	15.8	15.2	1.8	13.4	2.4
1957	31	15.9	14.8	1.9	12.9	3.0

a Lower third of price range for Medium slaughter steers, up to 1,000 pounds, public stockyards.

b Based on assumption of 50% average yield, varying from year to year in accordance with variations in the Canada average yield for all grades.

Source: D.B.S., Quarterly Bulletin of Agricultural Statistics, Ottawa. Canada Department of Agriculture Livestock Market Review, Ottawa, annual.

TABLE 11. U.S. LIVE-TO-WHOLESALE MARKETING MARGINS, CENTS PER POUND OF LIVE WEIGHT, CHOICE GRADE CATTLE, 1949-55.

1949	1950	1951	1952	1953	1954	1955
2.5	2.1	2.4	2.5	2.9	2.6	2.6

Source: Beef Marketing Margins and Costs, U.S.D.A., Agricultural Marketing Service, Misc. Pub. 710, Washington 1956, pp. 10 and 11.

those derived above for Toronto and Winnipeg.

9. Estimation of Farm-Retail Spread for Beef

In estimating the farm-retail price spread for beef, the basis used was one pound of live beef cattle sold by the farmer.

In estimating the retail value equivalent of one pound of Good live steer, an average live-retail yield of 46% was used. This was arrived at by assuming an average live-to-dressed yield of 56%, and an average dressed-to-retail yield of 82.25%, which amounts to an average live weight 2.17 times as great as the equivalent retail weight. In other words, the retail price per pound must average more than double the live weight price per pound in order to cover the payment to the farmer before taking any marketing expenses into account. The 56% live-to-dressed yield was an average for the decade of study, 1949 to 1958, and the actual figure used from year to year varied in accordance with variations in the Canada average yield for all grades.

Canada retail prices are available for the decade of study for six retail cuts of beef only. A careful scrutiny was made of available information on beef cut-out tests at retail in order to derive annual weights for prices of the six cuts in arriving at a composite yearly retail price for beef in Canada. The retail price of each of the six cuts was weighted by the estimated proportion of the carcass cut into related price groups of cuts. The cut-out tests called for declining weights for the higher-priced cuts and increasing weights for the lower-priced cuts. The tests also called for an increasing proportion of waste trimmed out at retail (bones, suet etc.) The significance of this kind of adjustment can be appreciated when one realizes that prices for the different cuts vary from over one dollar per pound for prime cuts, at one extreme, to one-hundredth of a cent per pound for waste fat and bones, at the other extreme. The results are summarized in Table 12.

The basis for our farm price was the stockyard price of Good steers. In order to arrive at a farm-gate price, stockyard and transportation charges were subtracted and an allowance for by-products was made. We examined the available data on live-to-cold dressed yield, and found that this increased somewhat over the period of study, both in Canada and the United States. On the other hand, the proportion of waste trimmed out at retail evidently increased during the decade. Both

TABLE 12. ESTIMATED VARIATIONS IN BEEF CUT-OUTS AT RETAIL, BY SEVEN MAJOR RELATED PRICE GROUPS OF CUTS, CANADA, 1949 AND 1958.

Price Group and Included Cuts	Per Cent of Carcass Weight 1949	1958
Sirloin (sirloin steak, tip, T-bone, porterhouse)	15.00	14.00
Round Steak (round, rump)	16.50	13.50
Rib Roast (standing rib, rib roast, 5-6-7 rib, inside and outside roll, wing steak or roast)	11.50	8.00
Blade Roast (blade roast, cross rib roast, chuck, shoulder roast, round bone)	16.50	16.50
Stewing (stewing beef, flank, short or braising ribs, boneless neck)	7.50	8.50
Hamburg (shank hind, centre, front and knuckle, brisket point and plate, short, hamburg)	17.00	20.00
Waste (fat, bone, shrinkage, waste)	16.00	19.50
TOTAL	100.00	100.00

of these factors were taken into account on an annual basis in calculating the farm-retail spread. The net effect of the two factors upon the farm-retail spread and farmer's share of the retail price was small because the effects of the two factors tend to be offsetting.

Table 13 shows how retail and farm prices for beef rose rapidly from 1949 to a peak in 1951, and then fell rapidly to 1953, tapered off for about three years thereafter, and then, in 1957 began climbing again for another cyclical upswing. The farm-retail spread on beef widened rapidly from a minimum in 1949 to a maximum in 1952, and then fell to 1955, after which it began widening again. The explanation for the widening spread seems to be both in additional services and in increased costs of marketing livestock and of processing and retailing

TABLE 13. SUMMARY OF FARM-RETAIL SPREADS ON BEEF, CANADA, 1949 TO 1958

Calendar Year	Retail Price[a] (¢/lb.)	Retail Equivalent Value of 1 lb. Live[b] (¢)	Farm Price[c] (¢/lb.)	By-Product Value (¢/lb. Live)	Farm Price Less By-Products (¢/lb.)	Farm-Retail Spread (¢/lb. Live)	Farmer's Share of Retail Value (%)
1949	56.9	25.4	19.8	2.4	17.4	8.0	68.5
1950	67.8	30.6	24.6	3.0	21.6	9.0	70.6
1951	85.4	40.1	31.8	4.0	27.8	12.3	69.3
1952	76.5	35.9	23.9	2.1	21.8	14.1	60.7
1953	62.1	29.0	18.4	1.9	16.5	12.5	56.9
1954	58.2	26.6	17.7	1.9	15.8	10.8	59.4
1955	58.9	26.8	18.1	1.9	16.2	10.6	60.4
1956	59.2	27.3	17.5	1.8	15.7	11.6	57.5
1957	61.2	28.4	17.2	1.9	15.3	13.1	53.9
1958	70.2	32.4	21.2	2.1	19.1	13.3	59.0

a Canada retail prices of each of six cuts weighted annually by estimated proportion of carcass cut into related price groups of cuts.

b Based on annually variable live-to-dressed yield averaging 56% over the decade, and waste at retail increasing from 16% in 1949 to 19.5% in 1958.

c Prices of Good steers on 11 public stockyards weighted regionally by marketings minus transport and stockyard charges.

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beef. There have undoubtedly been improvements in efficiency in meat distribution and processing during the last decade, but these have not been sufficient to offset the rising costs of materials, labour, transport etc., and of additional services such as pre-processing and pre-packaging.

10. Comparison with United States Estimates

The Canadian farmer's share of the retail value of beef is compared with that of the U.S. farmer in Table 14. The Canadian farmer's share was smaller throughout the decade of study. Also included in Table 14, for the sake of comparison, is the Manitoba farmer's share calculated in a special study referred to in the following section.

11. Special Manitoba Study

A study of the farm-retail price spread on beef in Manitoba was made in 1958 by Professor A.W. Wood of the University of Manitoba.[1] The study was limited to Medium quality steers and heifers marketed from Manitoba farms through the Union Stockyards at St. Boniface, processed in Manitoba plants, and sold at retail in Winnipeg. The time period covered was from 1935 to 1957. Fixed conversion factors used were 52% yield from live to carcass and 87% yield from carcass to retail.

Professor Wood reached several interesting conclusions in his Manitoba study:[2] (1) beef prices rose steadily after 1935, reached a peak in 1951, declined until 1954, and have since been relatively stable; (2) both the farm price and the market margin increased substantially during the 1935-57 period; (3) prices at all levels of the market have a strong tendency to rise and fall together; (4) the price received by packers deviated from this pattern on three occasions, being out of line on the high side in 1937 and 1948, and on the low side from 1955 to 1957; (5) when expressed in real terms (constant dollars), the whole increase in the margin over the period has occurred at the retail level;[3] (6) the farmer's share varied widely, from one-third to two-thirds of the Winnipeg consumer's beef dollar - the share was highest when prices were at their peak and lowest when prices were low; (7) a large part of the variation in the farm share of the consumer's beef dollar is a result of variations in the price of beef cattle, while marketing charges remain relatively stable.

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1 A.W. Wood, Market Margins for Beef in Manitoba 1935-1957, Department of Agricultural Economics and Farm Management, University of Manitoba, Winnipeg, 1958.

2 Wood op. cit., pp. 49-61.

3 The Ontario Government Brief already cited also concluded that the immediate source of the widening price spread on beef "...is the tendency for the retail margin over the wholesale price to increase", and that "...the role of processing in the widening of the price spread must be regarded as secondary to the role of retail services", Proceedings, p. 2661.

TABLE 14. COMPARISON OF FARMER'S SHARE OF RETAIL VALUE OF BEEF, UNITED STATES, CANADA AND MANITOBA, 1949-58

Year	U.S. Choice Grade[a] (%)	Canada Good Grade[b] (%)	Manitoba Medium Grade[c] (%)
1949	70	69	63
1950	72	71	63
1951	75	69	67
1952	72	61	56
1953	63	57	50
1954	65	59	51
1955	63	60	53
1956	60	58	51
1957	60	54	52
1958	62	59	n.a.

a Source: U.S.D.A., Farm-Retail Spreads for Food Products, Agricultural Marketing Service, Misc. Pub. 741, Washington 1957, p. 103, and The Marketing and Transportation Situation, Washington, Jan. 1958, pp. 46 and 47.

b Source: This study, Table 13.

c Medium steers and heifers.
Source: A.W. Wood, Market Margins for Beef in Manitoba 1935-1957, Department of Agricultural Economics and Farm Management, University of Manitoba, Winnipeg, 1958, p. 54.

PORK

Price Spreads on Pork Produced and Sold in Canada and the Main Marketing Influences Thereon

1. Brief Description of the Assembly of Hogs and Sales Agencies at the First Point of Sale

Hogs are usually shipped alive from the farm directly to packing plants or public stockyards or, as feeder hogs, to community auctions. Over the period of study, about 87% of the hogs marketed in Canada were delivered directly to packing plants and about 13% went through public stockyards. Shipping costs are met by the farmer, as are selling fees, transit insurance and shrinkage.

At the end of 1958 there were 11 public stockyards in Canada, two in Montreal and one in each of the following cities: Toronto, Winnipeg, Regina, Moose Jaw, Prince Albert, Calgary, Edmonton, Lethbridge and Vancouver. The stockyards at Toronto, Winnipeg and Calgary handle the largest volume of hogs delivered to the public stockyards.

There is no public stockyard in the Maritime Provinces. In Nova Scotia and New Brunswick hogs are sold through Maritime Co-operative Services, a co-operative selling agency located at Moncton , New Brunswick. During the period covered by this study, it has become the custom of the buyer of hogs to pay the price officially quoted from the Montreal stockyards.

In Quebec, commission firms handle the majority of hogs sold in the public stockyards. The Cooperative Federee de Quebec has three of its own plants for slaughtering members' hogs.

All hogs in Ontario are marketed through the Ontario Hog Producers' Co-operative. Some hogs go through the public stockyards, but a large volume is sold through what is known as "assembly" yards, of which there are a total of 20 in the province. The hogs are sold from these yards on an f.o.b. basis. The producer pays the transportation cost to these yards.

In the Prairie Provinces, the Canadian Livestock Co-operative Limited, the Livestock Division of the Saskatchewan Wheat Pool, and the Alberta Livestock Co-operative, handle a large percentage of the hogs. Nearly all these sales are made on an f.o.b. basis.

The Province of British Columbia no longer has a public stockyard, as the one that had been in operation over the period closed on June 6, 1959. Most of the hogs in British Columbia go directly to packing plants. The greater part of the province's hog supplies come from Alberta.

Federally-inspected and approved packing plants are located in

all the provinces across Canada. Of the 125 plants that were in operation at the beginning of 1959, 51 were located in Quebec, 40 in Ontario, 22 in the Prairies, 7 in British Columbia and 5 in the Maritimes.

The Canada Department of Agriculture, Health of Animals Division, provides a meat inspection service at each plant under federal inspection. All meat and meat products for human consumption are marked, indicating that the product has met federal health requirements. There is no charge for this service. Approved plants are not provided with federal health of animal service, although some of these plants have provincial or municipal health inspection.

The Canada Department of Agriculture, Livestock Division, provides a hog grading service. Graders are available at each plant under federal inspection. A grading service is also available at approved plants, not under federal inspection, that kill a minimum of 50 hogs per week. The Department does not charge for this grading service.

Over the years 1949 to 1958, the proportion of hogs slaughtered in federally-inspected or approved plants increased to where it was close to 80% of total hog slaughterings.

2. Grading of Hog Carcasses

Between 1935 and 1940 there was an optional system of grading in effect, whereby the producer could have his hogs graded alive or on a carcass basis. Since October, 1940, all hogs entering provincial or export trade must be graded according to Canadian standards. There are 14 official grades for hog carcasses and these are as follows: A; B_1; B_2; B_3; C; D; Light; Heavy; Extra Heavy; Physical Injury; Ridgling; Stags; Sows 1; and Sows 2.

The proportion of A, B_1 and C hog carcasses of the total hog gradings in federally-inspected and approved plants is shown in Table 1. Over the 10-year period, the average proportion of hogs grading "A" was approximately 29% of total hog gradings, and those grading "B_1", 42% of the total. These two top grades together averaged 71%. Table 1 shows also that over the decade there has been a relative decline in the top quality hogs with simultaneous increase of Grade C hogs. The proportion of these three grades, taken together, did not change and averaged about 80%.

3. Price Differentials Between Grades

Hog carcasses are bought by grade on a weight basis, with the quoted price issued daily for each of the public stockyards in Canada. The highest price is paid for "A" grade carcasses weighing from 140-170 pounds. Preferred live weights are from 190 to 200 pounds. Price differentials on Grades A, B_1, B_2, B_3 and C are fairly standard and stable in the public stockyards across the country. Grade prices below C fluctuate considerably.

TABLE 1. GRADES A, B_1 AND C OF HOG CARCASSES GRADED IN FEDERALLY-INSPECTED AND APPROVED PLANTS, AS PER CENT OF TOTAL GRADINGS, CANADA, 1949 TO 1958.

Year	A	B_1	C	Total Hogs Graded
		(per cent)		(thousands)
1949	31.1	43.9	4.5	4,429
1950	32.2	43.3	4.2	4,776
1951	31.3	41.8	4.6	4,895
1952	28.5	41.2	6.5	6,699
1953	27.3	43.1	7.8	5,003
1954	26.0	44.0	9.1	5,079
1955	27.1	42.3	9.6	5,917
1956	28.5	41.4	9.7	5,960
1957	28.7	41.6	9.9	5,400
1958	28.7	41.2	9.8	6,459

Source: Canada Department of Agriculture, Livestock Market Review, Ottawa, Annual.

4. Hog Premiums

Beginning January 24, 1944, the Canadian Government paid a premium to hog producers of $3.00 per hog on Grade A and $2.00 per hog on Grade B_1. On April 1, 1946, these premiums were reduced to $2.00 per head on Grade A and $1.00 on Grade B_1. Hog premiums are paid to the producer by the Government after verification of the individual producer's gradings.

5. Geographical Distribution of Hog Marketings

Hog marketings handled by federally-approved and inspected plants, are shown by province of origin in Table 2. Hogs are produced and marketed in all the provinces of Canada, with the Province of Ontario having the largest production, followed by Alberta and Quebec. Over the period studied Ontario, Alberta and Quebec together produced 81.5% of Canadian production. Manitoba and Saskatchewan produced 15.0%, followed by the Maritime Provinces with 2.8%, and British Columbia with 0.7%. The eastern provinces produced 59.4% of Canadian production, with the western provinces producing 40.6%. The Prairie Provinces with 18% of the population produced 40% of the hogs. Surplus live hogs and pork from the Prairies are shipped to deficit areas in central and eastern Canada and British Columbia.

6. Interprovincial Movement of Hogs

The net interprovincial movement of live hogs is summarized in Table 3. There is a large movement of hogs from Ontario into Quebec,

TABLE 2. DISTRIBUTION OF HOG MARKETINGS, BY PROVINCES, CANADA, 1949 TO 1958

(Thousand Carcasses)

Provinces	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	10-Year Average
Maritimes	158	190	219	219	137	144	138	125	118	133	155
Quebec	846	1,015	1,497	810	810	900	1,057	1,060	937	1,129	1,031
Ontario	1,928	2,028	2,589	1,844	1,844	1,786	1,995	2,196	2,017	2,184	2,061
Eastern Canada	2,932	3,233	4,305	2,791	2,791	2,830	3,190	3,381	3,072	3,446	3,247
Manitoba	260	266	451	451	321	335	437	388	332	464	355
Saskatchewan	280	280	537	537	420	421	562	577	535	704	464
Alberta	925	960	1,362	1,362	1,432	1,462	1,686	1,572	1,432	1,812	1,360
British Columbia	32	38	44	44	39	32	41	42	29	32	36
Western Canada	1,497	1,544	2,394	2,394	2,212	2,250	2,726	2,579	2,328	3,012	2,215
CANADA	4,429	4,777	6,699	6,699	5,003	5,080	5,916	5,960	5,400	6,458	5,462

Source: Canada Department of Agriculture, Livestock Market Review, Annual.

where they are slaughtered. A considerable volume of both fresh and processed pork cuts moves into the Maritimes from Quebec. There is, however, no reliable data available showing the size of this movement into the Maritimes.

Manitoba has a large inward movement of hogs, drawing from the other Prairie Provinces. Both Saskatchewan and Alberta have a large outward movement. The large inward movement into British Columbia, a deficit area, originates mainly in Alberta.

The seasons of heavier and lighter marketings are reflected in the interprovincial movement of hogs. The largest movement takes place during October-December, and the smallest during July-September.

TABLE 3. NET INTERPROVINCIAL MOVEMENT OF LIVE HOGS, QUARTERLY, CANADA, 10-YEAR AVERAGES, 1949 TO 1958

(+) Inward Movement,
(-) Outward Movement

Provinces	January -March	April -June	July-September	October-December
		(numbers)		
Maritimes	- 22	- 240	+ 72	- 185
Quebec	+ 50,978	+ 47,759	+ 39,603	+ 64,357
Ontario	- 46,551	- 42,573	- 35,092	- 58,345
Manitoba	+ 72,772	+ 58,432	+ 43,998	+ 93,865
Saskatchewan	- 53,223	- 38,789	- 29,833	- 70,819
Alberta	- 92,221	- 94,585	- 73,043	-105,924
British Columbia	+ 67,446	+ 69,956	+ 54,290	+ 76,928

Source: Canada Department of Agriculture, Livestock Market Review, Ottawa, Annual.

7. The Storage of Pork

Storage is a very important stabilizing function in pork marketing. There is a considerable seasonal variation in production and, without a storage program, there would be much greater seasonal variation in prices, with prices tending to fall to a very low level during the seasons of heaviest hog marketings, i.e., during the fall months and first five months of the year. The distribution of pork storage and the quantity stored is outlined in Table 4. Storage stocks are built up over the period November to May, the months of heaviest production. Stocks are reduced during the summer when the marketings of hogs are lighter.

TABLE 4. PORK IN COLD STORAGE, PACKERS' AND WHOLESALE WAREHOUSES IN CANADA, BY PROVINCES, FIRST BUSINESS DAY OF THE MONTHS, FEBRUARY, MAY, AUGUST AND NOVEMBER, 10-YEAR AVERAGES, 1949 TO 1958.

(Thousand Pounds)

Provinces	February	May	August	November
Maritimes	1,184	2,165	1,661	1,169
Quebec	8,178	12,373	7,969	7,051
Ontario	10,493	14,739	11,685	8,837
Manitoba	5,236	5,997	3,998	2,631
Saskatchewan	3,086	3,668	2,634	1,307
Alberta	7,515	9,636	7,199	4,171
British Columbia	2,743	3,419	2,390	1,637
CANADA	38,435	51,997	37,546	26,803

Source: D.B.S., Stocks of Food Commodities in Cold Storage and Other Warehouses, Ottawa, Annual.

A storage program is helpful in meeting peak demands for pork products. There are two periods during the year when there is a heavy consumption of pork, the Easter and Christmas-New Year periods. The supply of pork cuts is built up through storage stocks for what is known in the trade as the Christmas and the Easter "put-down".

The three provinces that produce over 80% of the hogs also hold the largest stocks in storage, with Ontario holding the largest, followed by Quebec and Alberta.

8. Price Support for Hogs

The Agricultural Prices Support Act received Royal assent on August 15, 1944, and an amendment made in 1950 made it continuous from April 1, 1950. This legislation was repealed and was succeeded by the Agricultural Stabilization Act, effective April 1, 1958. The first effective date for the support of pork products under the Agricultural Prices Support Act was on January 24, 1951. Purchases were made by the Board during the calendar year 1952, and the fiscal year 1958/59, starting in October of 1958.

During 1952 the United States placed an embargo on imports of Canadian hogs and pork due to an outbreak in Saskatchewan of foot-and-mouth disease. Hog prices dropped to the price support level of $26.00 per 100 pounds, and the Agricultural Prices Support Board had to make heavy purchases to prevent prices dropping further. A large quantity of pork was preserved by canning.

From 1953 to 1958, at a support level of $23.00, no purchases by the Board were required. In 1958, the support was raised to $25.00.

In October, 1958, the Board again began support operations and became heavily committed in both fresh and canned pork. In October, 1959, the support level dropped to $23.65.

9. The Hog-Barley Price Ratio and Gradings of Hog Carcasses

The effect of the hog-barley ratio, i.e., the number of bushels of No. 1 feed barley that are equal in value to 100 pounds of Grade B_1 live hog, including the federal hog quality premium, on the number of hogs slaughtered and graded in federally-inspected and approved plants is shown in Table 5. The relative prices of hogs and feed grain, as indicated by the hog-barley price ratio, has considerable influence on the contraction and expansion of hog production. Other factors, such as price support policy, farm cash income and the quantity of feed available on farms, also affect hog production. With a hog-barley ratio above average, production tends to be encouraged, while a ratio below average tends to discourage production. Hog-barley price relationships during the fall and spring breeding seasons affect the decisions of hog producers in planning their pig crops. On the average, about 12 months pass between the time when sows or gilts are bred and the time when the offspring are ready for market.

TABLE 5. HOG-BARLEY RATIO,[a] AND TOTAL CARCASS GRADINGS, SIX-MONTH AVERAGES, CANADA, 1949 TO 1958

Year	Hog-Barley Ratio		Total Carcasses	
	January-June	July-December	January-June	July-December
			(thousands)	
1949	21.4	17.5	2,049	2,380
1950	16.0	17.3	2,529	2,247
1951	18.7	20.1	2,392	2,503
1952	16.0	15.6	3,191	3,508
1953	17.5	24.5	2,731	2,272
1954	29.7	17.9	2,460	2,619
1955	16.7	17.9	2,956	2,961
1956	15.9	20.9	3,212	2,748
1957	25.2	25.8	2,751	2,649
1958	26.0	21.0	2,996	3,462
10-Year Average	20.3	19.9	2,727	2,735

a The ratio is based on Winnipeg hog and barley prices.

Source: Canada Department of Agriculture, Livestock Market Review, Ottawa, Annual.

The number of B_1 carcasses graded, together with the average

weighted prices for B_1 carcasses, are shown in Table 6 and Chart 1. Over the period studied, there appears to have been 2½ hog production cycles beginning from a low supply phase in 1949, rising to a peak in 1952, falling to a low phase by the end of 1953, rising to a peak in 1956, falling to another low phase at the end of 1957, and rising to a peak in 1959. During periods of higher production prices were down, and during periods of lower production prices were up. Historically, hog production and prices have been subject to cyclical variations averaging three to four years in duration.

TABLE 6. B_1 CARCASS GRADINGS AND B_1 CARCASS PRICES, SIX-MONTH AVERAGES, CANADA, 1949 TO 1958

Year	B_1 Carcasses		B_1 Carcass Prices	
	January-June	July-December	January-June	July-December
	(thousands)		(dollars per 100 lbs.)	
1949	878	1,013	30.2	29.2
1950	1,082	939	27.5	29.8
1951	991	997	33.6	31.4
1952	1,233	1,411	25.4	25.0
1953	1,159	964	27.5	32.0
1954	1,057	1,135	34.3	25.7
1955	1,244	1,220	23.8	22.9
1956	1,327	1,121	21.7	27.7
1957	1,163	1,050	27.9	28.2
1958	1,201	1,302	28.5	25.2
10-Year Average	1,134	1,115	27.7	27.4

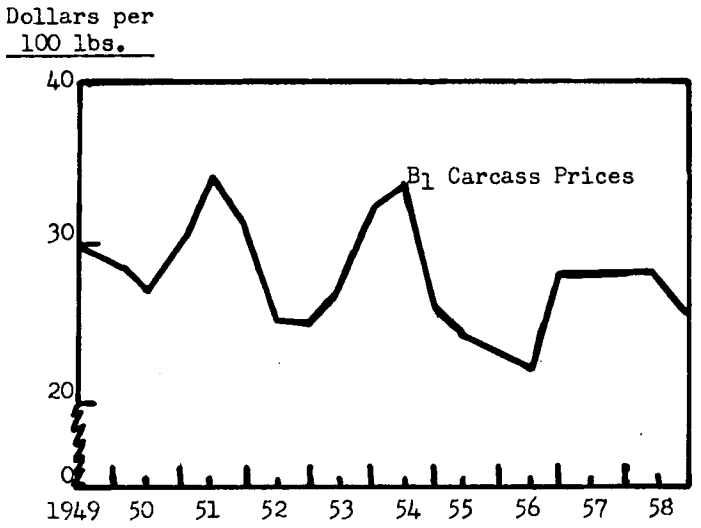
Source: Canada Department of Agriculture, Livestock Market Review, Ottawa, Annual.

10. Seasonal Pattern of Production and Price Variability

Monthly indexes of hog marketings and carcass prices, based on 10-year averages, are shown in Table 7. Farrowings of pigs are concentrated in the spring and autumn. Over the period studied, the heaviest marketings of hogs occurred during the fall months, increasing to a peak in December. There were particularly heavy marketings in December of the price support years 1952 and 1958. A second season of heavy marketings normally comes during the spring months, reaching a secondary peak during the month of March with the marketing of the autumn pig crop. The month of March was the peak month in 1950, 1953 and 1956. A third and smaller peak occurred in June and was followed by a summer low in marketings.

Carcass prices tend to be inversely associated with changes in production - seasons of higher marketings usually were associated

CHART 1. B_1 CARCASS GRADINGS AND B_1 CARCASS PRICES, SIX-MONTH AVERAGES, CANADA, 1949 TO 1958



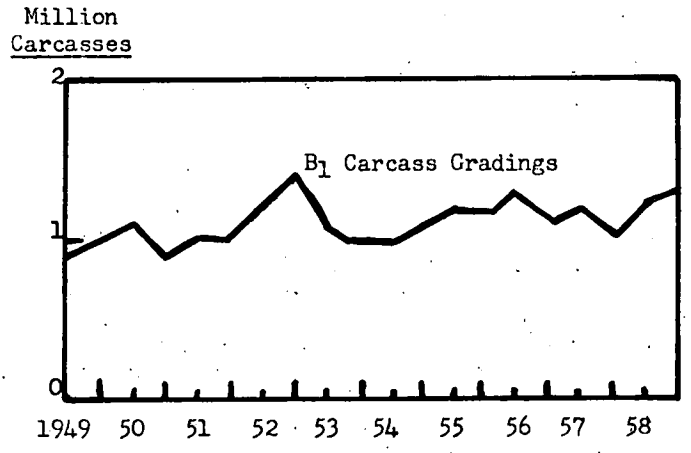


TABLE 7. SEASONAL PATTERN OF HOG MARKETINGS AND B_1 - HOG CARCASS PRICES, CANADA, 10-YEAR AVERAGES, 1949 TO 1958

(Average for 10 Years = 100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Hog Marketings[a]	92.1	92.1	117.3	97.2	93.8	105.5	75.4	73.7	100.5	98.8	115.6	137.4
B_1 Carcass Prices	96.1	96.8	98.2	97.1	98.6	109.0	107.5	107.5	105.0	97.1	92.5	94.3

a Adjusted for seasonal variations in carcass weights.

Source: Adapted from Department of Agriculture, Livestock Market Review, Ottawa, Annual.

with lower prices and seasons of lower marketings with higher prices. Seasonal price changes, however, were not as marked as seasonal changes in marketings. The 10-year average shows that B_1 carcass prices fluctuated about 10% above or below the annual average price, whereas hog marketings showed considerable variations, going up to about 37% above the annual average and 26% below the average.

11. Imports, Exports and Stocks of Pork

The quantities of pork imported, exported and stocks on hand at January 1 for each of the years 1949 to 1958 are shown in Table 8.

TABLE 8. IMPORTS, EXPORTS AND STOCKS OF PORK ON JANUARY 1, CANADA, 1949 TO 1958

Year	Imports[a]	Exports[a]	Stocks on Hand, January 1[b]
		(thousand pounds)	
1949	5,734	83,422	32,439
1950	6,005	92,302	35,445
1951	22,761	31,933	31,292
1952	4,836	30,502	39,000
1953	461	75,539	68,813
1954	1,499	74,958	30,752
1955	120	78,819	34,466
1956	114	66,688	36,626
1957	1,467	42,402	21,866
1958	1,657	68,148	25,287

a Basis dressed carcass.

b Total of fresh, frozen, cured and in-cure, and offal (frozen).

Source: D.B.S., Trade of Canada, Ottawa, Annual; D.B.S., Stocks of Food Commodities in Cold Storage and Other Warehouses, Ottawa, Annual.

Over the period reviewed, there were only small imports of pork, with the exception of the year 1951, when imports were 3.5% of pork production. Otherwise, imports as a per cent of production varied from .01% to 1%.

During the years previous to the period studied, the main export market for Canadian pork was the United Kingdom. Over the last 10 years, however, a considerable volume of pork, ranging from 3.5% of pork production in 1952, to 14.8% in 1950, moved to the United States. The years 1949 and 1950, with Canada-United Kingdom contracts in force, showed the largest exports of the period. Exports dropped drastically

in 1951 and remained at approximately the same level in 1952. The year 1951 saw the completion of United Kingdom pork contracts, and 1952 was the year of the United States embargo on Canadian pork products because of foot-and-mouth disease in Canada. Exports more than doubled in 1953, as there was a considerable export of canned pork to the United States during the first six months of that year. Exports remained at this higher level for the year 1954 and showed a further increase in 1955. In 1956 and 1957 pork exports decreased significantly because during these two years production was low and prices remained at a relatively high level. With heavy production of pork during the fall of 1958, and prices at the support level, exports of pork for 1958 showed an increase of over 28 million pounds over the previous year.

There is a good market in the United States for some Canadian pork products, such as hams and backs (loins), bacon and sides, which go into what is known as a "premium" market. The larger part of our pork exports is in these cuts. When the general price levels of hog carcasses are about the same in both countries, the wholesale price of Canadian hams and backs is considerably higher in the United States than in Canada. Whenever there is a surplus of hogs in Canada, Canadian prices drop near to, or to the equivalent, of United States prices. During these periods a large part of our surplus pork is normally exported to the United States.

12. Domestic Supply and Utilization

The quantities of pork, from hogs slaughtered in federally-inspected and approved plants and available for domestic utilization, are presented in Table 9. It should be noted that, except for pork canned under the Agricultural Prices Support Board in 1952 and 1953, the quantity of pork canned by the trade is included in the figures for domestic utilization. Although there have been considerable year-to-year variations in the quantities available for domestic utilization and the per capita consumption, the trend has been definitely upward.

13. Estimation of the Farm-Retail Price Spread for Pork, Calendar Years, Canada, 1949 to 1958

Retail prices for five major pork cuts were used in the estimation of the composite retail carcass price for pork. Of the five cuts used, two are retailed fresh as loin centre cut chops and Boston butt and three are sold processed as ham (bone removed), side bacon (sliced and rindless) and cottage roll (a shoulder cut). These cuts represent the four major areas of the hog carcass, namely, the ham, loin, belly and shoulder. The cuts chosen from these areas are the ones sold at retail in the greatest volume, and represent approximately 68% of the carcass. The retail prices for the five cuts were weighted by the percentage of the total carcass weight accounted by each cut. An allowance was made for the minor cuts, such as spare ribs and hocks, and an adjustment was made to the average weighted price of the retail cuts.

The prices for B_1 carcasses on 11 public stockyards were weighted regionally by the number of B_1 hogs graded. An allowance was

TABLE 9. PORK: SUPPLY AND DISPOSITION, CANADA, 1949 TO 1958

Year	Total of Production, Imports and Stocks on Hand, Jan. 1	Total of Exports and Stocks on Hand, Dec. 31	Inspected Quantities Available for Domestic Utilization[a]	Per Capita Utilization[b]
	(million pounds)			(pounds)
1949	623.9	118.9	505.0	37.6
1950	664.0	123.6	540.4	39.4
1951	696.9	70.9	626.0	44.7
1952	777.1[c]	99.3	677.8	46.9
1953	711.3[c]	106.3	605.0	40.8
1954	697.6	109.4	588.2	38.5
1955	801.8	115.4	686.4	43.7
1956	812.1	88.5	723.6	45.0
1957	733.6	67.7	665.9	40.1
1958	878.7	115.1	763.6	44.8
10-Year Average	739.7	101.5	638.2	42.2

a Total supply minus exports and stocks on hand, December 31.

b It includes only quantities of pork marketed through federally-inspected or approved plants.

c Adjusted to exclude the amount of pork put into cans under the Agricultural Prices Support Board.

Source: Adapted from Canada Department of Agriculture, Livestock Market Review, Ottawa, Annual; D.B.S., Stocks of Food Commodities in Cold Storage and Other Warehouses, Ottawa, Annual; and D.B.S., Trade of Canada, Ottawa, Annual.

made for the carcass equivalent value of the by-products, such as lard fat and products such as feet and edible trimmings, which are not generally sold at retail in this country, and this was deducted from the stockyard price.

It was not possible to determine, with any degree of accuracy, the farm-gate price for hogs, because of the difficulty in arriving at a cost for transporting hogs from the farm to the first point of sale. The farmer is paid on a carcass-graded basis and, in most instances, delivers his hogs directly to the packing plant or public stockyards in his own truck or by hired truck. In either case, there is a transportation cost. Some hogs are also purchased at the farm and, when payment is made, a charge for trucking may be deducted. It is, therefore, difficult to determine a transportation cost which could be deducted from

the stockyard price in order to arrive at a farm-gate price.

The calculations made of stockyard and retail prices, price spreads and farmers' shares (stockyard basis) are summarized in Table 10. Both retail and stockyard prices fluctuated considerably from year to year over the 10-year period. An upward or downward movement of stockyard prices was reflected in a movement of retail prices. The retail price movement, however, generally showed greater fluctuation in prices. The stockyard price trended downwards.

The price spread increased from 1949 to 1954, decreased in 1955, and then increased from 1956 to 1958. In this latter year, the price spread approached the peak level of 19.7¢ reached in 1954. Over the period as a whole, there was a definite widening of the spread.

The farmer's share (stockyard basis) of the retail equivalent values averaged 60% over the period. From 1949 to 1951, the farmer's share remained fairly stable at about 66%, but from 1952 to 1956 it moved downwards to 57.3%. In 1957 the farmer's share increased slightly, but dropped again in 1958 to 56.5%. Over the period as a whole, the farmer's share definitely decreased.

The widening spread and the declining farm share seem to have been due mainly to a substantial increase over the decade in the amount of processing and packaging. This refers to the smoked, and not the fresh cuts. Ham and bacon used to be sold in whole cuts, but now usually sell defatted, skinless, boneless, in small cuts or slices, and packaged in plastic.

As we have indicated earlier, prices vary with the seasonal pattern of marketings. A summary of the 10-year monthly averages of stockyard prices and retail equivalent values, price spreads and the farmer's share of the retail value is given in Table 11.

Pork price spreads tend to be more narrow during the first half of the year and wider during the latter half. This tendency can be explained by the seasonal hog marketing pattern, already referred to, and the lag in retail prices. Prices for hog carcasses usually advance during the first half of the year when hog marketings are declining. Since retail prices tend to lag behind stockyard prices during upward and downward movements, price spreads are narrower on the upswing in the first half of the year, and wider during the downswing in the second half of the year. When pork prices are rising or high, there is some resistance at retail to higher prices because of the ready substitution of other meat, (notably beef) for pork. When pork prices are falling or low, there seems to be a tendency to resist decreases in marketing margins. The seasonal pattern of the farm share is inverse to that of the spread, i.e., the share tends to be larger during spring and summer and smaller during autumn and winter.

14. Comparison of Canadian and United States Price Spreads for Pork

A valid comparison of Canadian and United States price spreads cannot be made. One basic reason is that the farm price used in the

TABLE 10. SUMMARY OF FARM (STOCKYARD)-RETAIL SPREADS ON PORK, CANADA, 1949 TO 1958

Calendar Year	Composite Retail Price[a] (¢/lb.)	Retail Equivalent Value of 1 lb. Carcass Pork[b] (¢)	Stockyard Price B1 Hogs[c] (¢/carcass lb.)	By-product Value[d] (¢/carcass lb.)	Farm (Stockyard) Price Less By-products (¢/carcass lb.)	Farm (Stockyard) -Retail Spread (¢)	Farmer's Share (Stockyard Basis) of Retail Value (%)
1949	54.4	41.9	29.6	2.0	27.6	14.3	65.9
1950	53.4	41.1	28.4	1.8	26.6	14.5	64.7
1951	60.0	46.2	32.6	2.3	30.3	15.9	65.6
1952	52.2	40.2	25.4	1.3	24.1	16.1	60.0
1953	59.4	45.7	28.6	1.5	27.1	18.6	59.3
1954	62.2	47.9	30.0	1.8	28.2	19.7	58.9
1955	50.2	38.7	23.8	1.4	22.4	16.3	57.9
1956	52.0	40.0	24.4	1.5	22.9	17.1	57.3
1957	59.0	45.4	29.1	2.0	27.1	18.3	59.7
1958	57.9	44.6	26.8	1.6	25.2	19.4	56.5

a Retail prices of five major pork cuts weighted regionally, with adjustment for minor cuts.

b Based on a carcass-retail yield of .77.

c Prices of B1 hog carcasses on 11 public stockyards, weighted regionally by gradings.

d Amount allowed for by-products.

TABLE 11. SUMMARY OF CALCULATIONS OF FARM (STOCKYARD)-RETAIL SPREADS FOR PORK, 10-YEAR MONTHLY AVERAGES, CANADA, 1949 TO 1958

Month	Composite Retail Price[a] (¢/lb.)	Retail Equivalent Value of 1 lb. Carcass Pork[b] (¢)	Stockyard Price B_1 Dressed Hogs[c] (¢/carcass lb.)	By-product Value[d] (¢/carcass lb.)	Farm (Stockyard) Price Less By-products (¢/carcass lb.)	Farm (Stockyard) -Retail Spread (¢)	Farmer's Share (Stockyard Basis) of Retail Value (%)
Jan.	53.4	41.1	26.7	1.8	24.9	16.2	60.6
Feb.	53.9	41.5	27.0	1.8	25.2	16.3	60.7
Mar.	54.3	41.8	27.4	1.8	25.6	16.2	61.2
Apr.	54.2	41.7	27.1	1.8	25.3	16.4	60.7
May	54.4	41.9	27.5	1.6	25.9	16.0	61.8
June	58.0	44.7	30.4	1.7	28.7	16.0	64.2
July	58.7	45.2	30.0	1.5	28.5	16.7	63.1
Aug.	59.3	45.7	30.0	1.7	28.3	17.4	61.9
Sept.	59.3	45.7	29.3	1.8	27.5	18.2	60.2
Oct.	58.0	44.7	27.1	1.8	25.3	19.4	56.6
Nov.	56.2	43.3	25.7	1.6	24.1	19.2	55.7
Dec.	54.9	42.3	26.3	1.7	24.6	17.7	58.2

a Retail prices of five major pork cuts weighted regionally, with adjustment for minor cuts.

b Based on a carcass-retail yield of .77.

c Prices of B_1 hog carcasses on 11 public stockyards, weighted regionally by gradings.

d Amount allowed for by-products.

determination of the United States price spread is the price for all grades of hogs sold live at the farm. In Canada a stockyard price for a B_1 grade of hog carcass is used. In addition to the difference in the basis of farm prices, there are differences in the method of comparing farm and retail prices. For these reasons, no detailed comparison was attempted.

Bacon

Bacon is one of the main pork products and as such makes up approximately 15% of the hog carcass. Over the period of study, the per capita consumption of bacon in large urban centres was about 7.8 pounds per year. Consumer expenditures on bacon over the same period amounted to about 24% of expenditures on all pork products. Over the period 1954 to 1957, approximately 50% of the bacon was sold sliced and the proportion of sales of sliced bacon has increased during these four years.[1]

15. The Seasonal Pattern of Frozen Bellies in Storage, First Business Day of the Month

Stocks of frozen bellies are normally built up during the winter months to a high point in May, and are withdrawn from storage from June to October, a period of lower marketings, and processed into bacon. It may be noted at this point that previous to the decade of study, it took from three weeks to one month to cure bacon and, at present, by an injecto process bellies may be cured in two or three days. The seasonal pattern of frozen bellies in storage is shown in Table 12.

TABLE 12. INDEXES OF MONTHLY PATTERN OF FROZEN BELLIES IN STORAGE, CANADA, 10-YEAR AVERAGES, 1949 TO 1958

(Average for 10 Years = 100)

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
86.9	105.0	121.8	151.3	178.4	172.6	151.3	100.4	48.7	17.9	20.6	45.1

Source: Adapted from D.B.S., Stocks of Food Commodities in Cold Storage and Other Warehouses, Ottawa, Annual.

16. Comparison of the Seasonal Pattern of Retail and Wholesale Prices of Bacon and B_1 Carcass Prices

Table 13 illustrates monthly changes of the retail and whole-

1 The Dominion Bureau of Statistics started to report separately the sales of bacon, sliced and not sliced from 1954.

TABLE 13. MONTHLY PATTERN OF RETAIL AND WHOLESALE PRICES FOR BACON AND FARM PRICES FOR B_1-CARCASS, CANADA, 10-YEAR MONTHLY AVERAGES, 1949 TO 1958.

(Average for 10 Years = 100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Retail Price	97.7	97.4	97.2	96.6	96.2	99.4	101.3	102.6	104.3	104.7	102.8	99.5
Wholesale Price (Winnipeg -Toronto)	96.4	98.0	96.7	95.2	96.4	101.3	101.8	104.2	107.4	104.9	101.0	97.0
B_1 Carcass Price	96.1	96.8	98.2	97.1	98.6	109.0	107.5	107.5	105.0	97.1	92.5	94.3

Source: Adapted from D.B.S., Prices and Price Indexes, Monthly, and Department of Agriculture, Livestock Market Review, Annual.

sale prices of bacon and B_1 carcass prices. Generally the changes in prices of B_1 hog carcasses are reflected in the retail and wholesale prices of bacon. There is, however, a time lag in the movement of retail and wholesale bacon prices behind the movement of hog carcass prices. This would seem to be partly explained by the time elapsed between buying the carcass and selling the bacon, caused by storage and processing. Of the three sets of prices, as given in Table 13, hog carcass prices show the largest variations and thus have a tendency to swing more rapidly upwards and downwards. Next are wholesale prices which tend to change more rapidly in both directions than the retail prices. The result is a narrowing of the retail bacon margin in the seasonal upswing of prices and a widening on the seasonal downswing. On the whole, the prices are above their annual average during the summer and early autumn and below their average during the winter and early spring.

DAIRY PRODUCTS

1. Characteristics of Milk and Milk Products Affecting their Price and Cost of Marketing

Raw cow's milk contains about 87% water and about 13% solids. The solids are divided into about 3½% fat and 9½% non-fat solids, the latter being in the form of proteins, calcium, phosphorus and riboflavin.

Milk is used in many ways: as fluid milk, in manufacture of butter (creamery, dairy and whey), ice cream, cheese (cheddar, process and other types), concentrated products (whole milk products and milk by-products), and used on the farm (farm-home consumed and fed to livestock).

Milk is a highly perishable product, which means that special care must be used from the time it is produced until it is in the hands of the consumers in either the fluid form or one of the manufactured forms. This special care in handling of milk, as well as other necessary marketing operations, has a definite bearing on the costs and the farm-retail spreads of dairy products in general.

The marketing of fresh milk includes three major functions - assembly, processing and distribution, which in many cases are performed by the same firm. In these three operations the biggest cost factors are payrolls and containers.

The marketing of manufactured milk products includes by and large the same three major functions, but these are usually performed by different firms and necessitate various and more expensive operations. All these additional operations make the costs of processing and marketing of manufactured milk products, other than butter, higher than of fluid milk and, therefore, the spreads are larger.

2. Dairy Products Regulations and Marketing Channels

Fluid milk is usually consumed within the district of production, while many of the manufactured dairy products enter interprovincial and export trade. Consequently, there are local, provincial and federal regulations that apply to milk and milk products.

Local by-laws regulate the supplying of milk or manufactured milk products and they make provisions for the care, handling, storage, transportation and distribution of these products.

Generally, provincial regulations apply to the entire milk industry. In some provinces, however, these regulations apply only to the production and marketing of fluid milk and cream.

All manufactured dairy products are governed by regulations under the Canada Dairy Products Act. According to the federal regulations, grade names, standards, packing and marking are prescribed for creamery butter, cheddar cheese and dry skimmed milk and each of these products must be graded before entering into interprovincial or export trade. Dairy products for which grade names are not established, such as dairy and whey butter, ice cream, all varieties or kinds of cheese, other than cheddar, and concentrated milk products, other than dry skimmed milk, are required to meet prescribed standards of composition, packing and marking before being exported or moved from one province to another.

For marketing of dairy products a wide variety of packages is necessary. Fluid milk leaves the producer's premises in cans or in tank trucks. Fluid milk is sold to consumers in bottles or waxed paper containers. The sale of fluid milk by dairies takes three forms: (1) direct sale by home delivery; (2) sale through retail outlets; and (3) sale to institutions (hospitals, schools, etc.).

Creamery butter leaves the processing plant in a solid pack of 56 pounds, which requires parchment liners in either a wooden or fibre box. At retail, butter is sold by grade and brand names in one-pound or half-pound prints in parchment or specially treated paper. The sale of creamery butter is done from creameries to consumers, institutions, retail stores, wholesalers and jobbers.

Cheddar cheese is packed in cylindrical form or square-type packages. To the consuming public cheddar, as well as all other varieties of cheese, is sold mostly in packages of one-pound or less. The marketing channels for cheese are similar to those for butter.

Evaporated milk is sold mostly in 16-ounce tins. Dry skimmed milk is packed in paper bags with polyethylene liners. Consumer-size packages are mostly of paper, made up of one, three and five-pound sizes. The manufacturers of concentrated milk products put these products either under their own or buyers' brands.

3. Production and Utilization of Milk and Milk Products

Total milk production in Canada shows a general upward trend that continues for several decades. There were, however, short periods in the past when the production was on the decline. Also, the last decade 1949-58, had two distinct periods. From 1949 until 1952, the total milk production was decreasing, but since 1953 it has been increasing, and in 1958 it attained an all-time record of 18 billion pounds.

The increase in total production, as well as the increase in average production per cow, is closely connected with higher quality of dairy cattle, better feeding and better management of dairy herds. The recent higher results are obvious, because the total milk production is much higher than that in the 1930's, although at that time the number of

milk cows was higher than at present by more than half a million head.

These rather significant changes in the total milk production, production per cow and the number of milk cows over the decade 1949-58, are given in Table 1.

TABLE 1. TOTAL MILK PRODUCTION, NUMBER OF MILK COWS AND PRODUCTION PER COW, CANADA, 1949 TO 1958

Year	Total Production (million lbs.)	No. of Milk Cows (millions)	Production per Cow (lbs.)	Index of Total Production (1949 = 100)	Index of No. of Milk Cows (1949 = 100)	Index of Production per Cow (1949 = 100)
1949	15,918	3,237	4,917	100	100	100
1950	15,322	3,119	4,912	96	96	100
1951	15,310	2,973	5,150	96	92	105
1952	15,309	3,006	5,093	96	93	104
1953	16,036	3,084	5,200	100	95	106
1954	16,528	3,120	5,297	104	96	108
1955	16,946	3,150	5,380	106	97	109
1956	16,966	3,160	5,369	107	98	109
1957	17,306	3,147	5,499	109	97	112
1958[a]	18,057	3,129	5,771	113	97	117

a Preliminary.

Source: D.B.S., Dairy Statistics, Ottawa, Annual.

An outline of the overall picture of the Canadian dairy industry over the last 10 years is presented in Table 2 which shows the total milk production and the proportion of its utilization in manufacture, fluid sales and home use.

In Table 2 we can see that between 39% and 44% of milk has been used in manufacture of creamery butter and close to 30% for fluid milk consumption. These two products are the most important in the total utilization of milk, because over the period 1949-58, they have accounted for about 75% of the total milk produced. The remainder of about 25% of the milk was used in the manufacture of cheese, concentrated products, ice cream, dairy butter and for farm consumption. Within this group we notice the growing importance of concentrated milk products and ice cream and the substantial relative decline in production of dairy butter and to a lesser degree, of cheese. Milk used on farms for home consumption and livestock feeding has shown only a slight relative decline.

Table 3 shows that from 1949 until 1951 there was a decline in production of creamery butter, but since 1952, the production has increased, and in 1958 it reached an all-time record of 336.1 million

TABLE 2. TOTAL MILK PRODUCTION AND UTILIZATION AS PER CENT OF PRODUCTION, CANADA, 1949 TO 1958

Calendar Year	Production	Used in Manufacture				Used on Farms	
		Fluid Sales Milk & Cream	Creamery Butter	Cheese	Concentrated Milk & Ice Cream	Dairy Butter	Other Purposes[a]
	(million lbs.)	(%)	(%)	(%)	(%)	(%)	(%)
1949	15,918	28.1	41.2	8.5	7.0	4.6	10.6
1950	15,322	29.7	40.0	7.5	7.6	4.2	11.0
1951	15,310	30.2	39.3	6.9	8.6	4.1	10.9
1952	15,309	28.3	42.9	5.3	9.0	3.4	11.0
1953	16,036	28.4	44.2	5.7	8.3	2.8	10.6
1954	16,528	28.5	44.3	6.2	8.2	2.4	10.4
1955	16,946	29.3	44.0	5.7	8.6	2.1	10.3
1956	16,966	30.9	41.8	6.1	8.9	1.9	10.4
1957	17,306	31.1	41.0	7.0	9.2	1.7	10.0
1958[b]	18,057	30.4	43.6	6.2	8.6	1.5	9.7

a Includes milk consumed in farm homes and fed to livestock.

b The figures for 1958 are preliminary.

Source: D.B.S., Dairy Statistics, Ottawa, Annual; The Dairy Review, Ottawa, Monthly.

TABLE 3. PRODUCTION OF PRINCIPAL DAIRY PRODUCTS, CANADA, 1949 TO 1958

Year	Creamery Butter	Cheddar Cheese	Fluid Milk & Cream	Ice Cream
	(million lbs.)			(million gals.)
1949	279.8	116.9	4,468.0	24.8
1950	261.5	97.7	4,545.5	23.8
1951	257.2	88.8	4,618.5	25.4
1952	280.7	67.8	4,326.4	27.3
1953	302.8	76.7	4,548.1	28.8
1954	313.2	85.3	4,713.6	28.6
1955	318.6	80.0	4,961.8	32.4
1956	303.3	84.7	5,234.0	33.2
1957	303.4	99.0	5,386.6	35.1
1958[a]	336.1	90.5	5,491.5	36.5

a Preliminary.

Source: D.B.S., Dairy Statistics, Ottawa, Annual.

pounds. Cheddar cheese production showed a similar decrease at the beginning of the decade, and in 1952 its production dropped to the lowest level in several decades. However, since 1953 the production has increased and in the last five years it has been maintained at the level between 80 and 100 million pounds.

Between 1949 and 1958, the sales of fluid milk and cream increased from 4,468.0 million pounds to 5,491.5 million pounds. This increase in consumption, however, was due to the increase in population since the per capita consumption has shown a slight decline for some time. Ice cream was the only product that showed a substantial increase over the whole period.

Although there are several concentrated milk products, only four are produced in large quantities, as is shown in Table 4. Of these four principal concentrated milk products, skimmed milk powder showed the biggest production increase, rising from 64.3 million pounds in 1949, to 186.8 million pounds in 1958. Also, the production of whole milk powder and evaporated whole milk showed a substantial rate of increase. Evaporated whole milk and skimmed milk powder account for over 80% of the production of this group.

TABLE 4. PRODUCTION OF PRINCIPAL CONCENTRATED MILK PRODUCTS, CANADA, 1949 TO 1958

Year	Evaporated Whole Milk	Condensed Whole Milk	Whole Milk Powder	Skim Milk Powder
		(million pounds)		
1949	231.3	23.5	13.2	64.3
1950	256.5	14.5	15.7	53.3
1951	290.4	19.5	17.4	52.8
1952	305.7	16.6	16.0	88.2
1953	272.0	18.5	18.7	82.9
1954	280.3	13.6	18.8	83.3
1955	294.9	13.2	20.9	87.1
1956	305.2	17.2	20.6	79.0
1957	316.8	14.7	23.1	120.7
1958[a]	310.2	14.2	19.7	186.8

a Preliminary.

Source: D.B.S., Dairy Statistics, Ottawa, Annual.

4. Domestic Disappearance

During the past decade, no substantial changes occurred in the overall domestic disappearance per capita of dairy products.

The last column of Table 5 shows that for the whole period, annual domestic disappearance of all dairy products in terms of fluid milk, has shown a slight and almost continuous decline over the period.

TABLE 5. DOMESTIC DISAPPEARANCE OF DAIRY PRODUCTS, CANADA, 1949 TO 1958

Year	Total Butter	Total Cheese	Whole Milk Products	Milk By-products	Ice Cream	Fluid Milk & Cream	All Dairy Products in Terms of Milk
			(pounds per capita)				
1949	22.1	5.3	16.5	5.2	9.3	412.4	1,049.8
1950	22.3	5.6	19.3	5.8	8.6	411.6	1,062.7
1951	21.2	5.7	20.0	6.5	9.1	405.6	1,033.8
1952	20.7	5.8	20.3	5.9	9.4	391.3	1,011.3
1953	20.6	6.2	20.7	6.4	9.7	394.3	1,016.2
1954	20.4	6.4	20.4	7.0	9.3	392.2	1,007.2
1955	20.3	6.6	20.5	7.4	10.4	386.6	1,004.3
1956	20.5	6.4	21.4	7.4	10.4	395.1	1,018.5
1957	20.3	6.6	21.1	7.6	10.6	390.5	1,010.6
1958[a]	19.1	6.7	20.4	8.9	10.8	386.2	984.3

a Preliminary.

Source: D.B.S., Dairy Statistics, Ottawa, Annual.

There are, however, definite changes in the consumption trends of particular dairy products. Although total production of creamery butter is increasing, and in 1958 it attained an all-time record of 336.1 million pounds, consumption per capita is irregularly declining. The 1949 per capita consumption of butter was 22.1 pounds and in 1958 it dropped to 19.1 pounds, which represents close to 14% decrease. In comparing 1958 with 1957, the decrease per capita was about 1.2 pounds which is a 6% decrease. In total consumption this means that in 1958 Canadians consumed 20.4 million pounds less of butter than in 1957. This decrease in 1958 was probably caused by an increase in retail prices for butter, which in turn was caused by the increase in price support for butter from 58¢ per pound to 64¢ per pound. At the same time total disappearance of margarine increased from 73 million pounds in 1949 to 145 million pounds in 1958. On per capita basis, the consumption of margarine increased from 5.4 pounds to 8.5 pounds, which is 57.4%. The increase in per capita consumption of margarine in 1958 over 1957 was close to 9%. In 1949 the combined butter-margarine consumption per capita was 27.5 pounds and in 1958, it was 27.6 pounds.

Also, the per capita consumption of fluid milk shows a slow and almost steady decline. It dropped from 412.4 pounds in 1949 to 386.2 pounds in 1958. As butter and fluid milk represent close to

three-quarters of the total milk production, it seems that with increased production the stocks of dairy products will also increase. At the end of 1958, the stocks of creamery butter had increased by 24 million pounds over 1957 and were only seven million pounds lower from an all-time high of 101 million pounds in 1955.

The consumption of other dairy products including cheese, ice cream and concentrated milk products, shows a definite upward trend. For dry skimmed milk, especially, there has been a great increase in production and in per capita consumption. The per capita consumption of milk by-products was 71% higher in 1958 than in 1949. A very important development in the dry skimmed milk industry has been the "instant" type of milk powder. This development has been a contributing factor to the increase in household consumption.

5. Exports and Imports of Dairy Products

Until the end of World War II, Canada was an exporter of large quantities of cheddar cheese which were sent almost exclusively to the United Kingdom. However, in the past few years, Canada has been exporting relatively small quantities of cheddar cheese, evaporated milk and whole and skimmed milk powder. Of all these products the exports of whole milk powder show a considerable increase over the decade and the export of evaporated milk shows a strong decline, dropping from 33.6 million pounds in 1950 to 3.2 million pounds in 1958. Exports of skimmed milk powder and cheese show great variations from year to year, which indicates that their markets are very uncertain. Table 6 presents exports and imports of dairy products over the decade 1949-58.

The biggest obstacle to the export of Canadian dairy products has been high prices, which make sales on international markets very difficult. Table 7 shows wholesale prices of butter and cheese in Canada and in some selected countries. All prices are expressed in Canadian currency in order to facilitate comparisons. It can be seen from Table 7 that it was difficult for Canadian butter and cheese to compete with any major producing country during the whole of 1958. Also, in other recent years, Canadian prices were higher.

Imports of dairy products have never been high, except for certain varieties of cheese and for creamery butter, due to temporary shortages, as for example, in 1951 and 1952. Because of the support price for creamery butter, cheddar cheese and skimmed milk powder, imports of these products are restricted by import permits.

6. Geographical Pattern of Milk Production

Dairying is carried on in all parts of Canada, but it is not evenly dispersed among the provinces. The provinces of Ontario and Quebec, taken together, account for over two-thirds of the total milk production in Canada. Second in importance are the Prairie Provinces.

TABLE 6. EXPORTS AND IMPORTS OF DAIRY PRODUCTS, CANADA, 1949 TO 1958

Year	Exports						Imports	
	Butter	Cheese	Evaporated Milk	Condensed Milk	Milk Powder Whole	Milk Powder Skim	Butter	Cheese
	(million pounds)							
1949	1.1	52.7	20.5	16.0	6.1	29.4	1.1	2.4
1950	1.6	63.1	33.6	3.9	9.2	9.1	a	10.2
1951	.5	30.7	21.6	8.3	10.1	1.0	17.9	11.7
1952	.9	2.1	19.9	6.1	13.0	29.7	4.6	12.1
1953	.2	16.4	13.4	5.2	13.9	23.5	a	5.2
1954	.1	5.0	6.3	1.8	14.3	10.4	a	5.9
1955	7.4	13.4	5.3	1.3	16.1	5.9	a	12.7
1956	2.1	11.5	6.3	2.6	17.3	5.9	a	9.0
1957	a	8.1	4.6	.7	16.4	.7	a	9.4
1958[b]	a	15.5	3.2	nil	17.5	46.5	a	11.2

a Less than 50,000 pounds.

b Preliminary.

Source: D.B.S., Trade of Canada, Ottawa, Annual.

TABLE 7. QUARTERLY WHOLESALE PRICES FOR BUTTER AND CHEESE IN CANADA AND IN SELECTED COUNTRIES, 1958

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
	(cents per pound)			
BUTTER:				
Canada:				
Wholesale solids, 1st grade, Montreal f.o.b.	62	63	62	63
Denmark:				
Jobber's price for "Lur-branded" butter, Copenhagen	33	23	27	36
Netherlands:				
Creamery, ex-factory, Leeuwarden	49	40	34	41
United Kingdom:				
New Zealand, 1st grade, wholesale price, London	30	25	28	32
Danish, wholesale, London	33	27	32	41
CHEESE:				
Canada:				
Cheddar, 1st grade, white, Montreal	33	32	34	33
Denmark:				
"Lur-branded" first quality, Copenhagen	22	20	18	23
Netherlands:				
Full-cream Gouda, ex-factory, Leeuwarden	22	19	19	25
United Kingdom:				
English white (selected), London	19	20	24	36
Canadian, finest white, London	39	39	36	37
New Zealand, finest white, waxed, London	18	19	22	33
Dutch, full-cream Gouda, London	31	27	25	33

Source: Canada Department of Agriculture, Agriculture Abroad, Vol. XIV, No. 2, April 1959.

Over the decade 1949-58, Quebec's share in Canada's milk production has increased from 31.0% to 33.7%, while for the same period, the Prairies have shown a relative decrease from 24.5% to 22.4%. The shares of Ontario, British Columbia and the Maritimes, as shown in Table 8, have changed only insignificantly.

The main factors on the demand side contributing to a considerable development of dairying in Quebec and Ontario have been the proximity of big cities and industrial centres. And the main factors

on the supply side affecting the location of dairying were adequate rainfalls, enabling the economical production of grasses for cattle feed, and the suitability of the land.

With population increases and the changes in consumption of particular dairy products, there have been general changes in the utilization of milk. In several provinces a steadily increasing percentage of the milk has been disposed of in the fluid milk market or used for making concentrated milk products and ice cream, while smaller percentages have been used for making creamery butter and for consumption on farms. This shift is of importance to the producers of milk because the price for fluid milk is higher than for milk used for making butter or cheese.

TABLE 8. TOTAL MILK PRODUCTION, CANADA AND PROVINCES AS PER CENT OF CANADA, 1949 TO 1958

Year	CANADA (million pounds)	Maritime Provinces	Quebec	Ontario (per cent)	Prairie Provinces	British Columbia
1949	15,918	6.9	31.0	33.5	24.5	4.1
1950	15,322	6.9	31.5	33.1	24.1	4.4
1951	15,310	6.8	31.5	33.1	24.2	4.4
1952	15,309	6.7	31.7	33.7	23.6	4.3
1953	16,036	6.8	31.9	33.5	23.3	4.5
1954	16,528	6.8	32.4	33.4	22.7	4.7
1955	16,946	6.6	33.0	33.3	22.5	4.6
1956	16,966	6.5	33.7	33.2	22.1	4.5
1957	17,306	6.3	33.9	33.2	22.1	4.5
1958	18,057	6.1	33.7	33.3	22.4	4.5

Source: Adapted from the D.B.S., Dairy Statistics, Ottawa, Annual.

Table 9 shows the total production of butter in Canada and the relative importance of particular provinces. Over the whole period, Quebec has been the biggest producer of butter and it is the only province whose share in Canada's butter production continues to increase. The Prairie's share as the other major surplus butter producer, decreased from 31.5% in 1949 to 26.9% in 1958.

Also, the production of cheddar cheese has shown some significant changes over the period, and these are shown in Table 10. Ontario has remained the principal cheese producer, not only in the last decade, but since the beginning of commercial production of cheese in Canada. However, over the last decade, its share in Canada's cheese production has shown a decrease from 72.7% to 68.5%, and that of Quebec has increased considerably, particularly in the last three years.

Dairy products, which rank as the third major contributor to

TABLE 9. CREAMERY BUTTER PRODUCTION, CANADA AND PROVINCES AS PER CENT OF CANADA, 1949 TO 1958

Year	CANADA	Maritime Provinces	Quebec	Ontario	Prairie Provinces	British Columbia
	(million pounds)			(per cent)		
1949	279.8	6.7	33.4	26.7	31.5	1.6
1950	261.5	6.8	33.5	26.3	31.6	1.8
1951	257.2	6.6	35.5	26.1	30.8	1.0
1952	280.7	6.0	36.4	28.1	28.1	1.3
1953	302.8	6.5	37.1	27.3	27.3	1.8
1954	313.2	6.7	38.2	26.6	26.2	2.3
1955	318.6	6.4	39.1	26.4	26.1	1.9
1956	303.3	6.5	40.3	26.2	25.9	1.0
1957	303.4	6.2	40.2	25.5	27.1	1.0
1958	336.1	5.8	39.7	26.6	26.9	1.0

Source: Adapted from the D.B.S., Dairy Statistics, Ottawa, Annual.

TABLE 10. CHEDDAR CHEESE PRODUCTION, CANADA AND PROVINCES AS PER CENT OF CANADA, 1949 TO 1958

Year	CANADA	Maritime Provinces	Quebec	Ontario	Prairie Provinces	British Columbia
	(million pounds)			(per cent)		
1949	116.9	1.4	21.2	72.7	4.3	.4
1950	97.7	1.5	21.0	72.0	4.7	.6
1951	88.8	2.5	18.2	74.2	4.4	.7
1952	67.8	2.1	16.5	75.5	5.2	.7
1953	76.7	1.7	14.1	78.0	5.2	.9
1954	85.3	2.0	18.2	74.2	4.7	.9
1955	80.0	1.8	18.9	74.4	4.1	.9
1956	84.7	1.9	26.0	67.9	3.5	.7
1957	99.0	1.8	28.4	66.0	3.1	.7
1958	90.5	1.8	26.3	68.5	2.5	.9

Source: Adapted from the D.B.S., Dairy Statistics, Ottawa, Annual.

farm cash income in Canada are of leading importance to some of the provinces. In Quebec and British Columbia the farm cash income from dairying is the largest of all farm product groups, and in Ontario and the Maritime Provinces it is the second largest source of farm income.

7. Seasonal Variations in Production and Prices

The extreme climatic differences between the winter and summer seasons in Canada have established a seasonal cycle in milk production and in farm prices for milk. Table 11 indicates these seasonal changes in production and farm prices over the decade 1949-58.

TABLE 11. INDEXES OF MONTHLY VARIATIONS IN MILK PRODUCTION AND FARM PRICES, CANADA, 1949 TO 1958

(Annual Average = 100)

	1949-58 Monthly Average	
Month	Production	Average Farm Prices for All Dairy Products
Jan.	65	112
Feb.	60	113
Mar.	76	109
Apr.	96	99
May	123	92
June	145	88
July	138	89
Aug.	129	91
Sept.	115	93
Oct.	102	98
Nov.	79	106
Dec.	72	111

Source: Adapted from the D.B.S., The Dairy Review, Ottawa, Monthly.

From November until April milk production is well below average. In February the production is at its lowest level, being about 40% below the average. From April milk production starts to increase sharply, reaches its peak in June and then decreases sharply also and reaches the average level in October. The farm prices follow a similar trend, but in the opposite direction. They are highest in February and lowest in June. However, the variations in farm prices are less pronounced as their variations are only 13% above and 12% below the annual average.

These seasonal variations, however, in the total milk production and the average farm prices for all dairy products cannot be applied with the same degree of validity to all particular dairy products.

Of the whole group fluid milk shows the smallest variations and creamery butter the largest. Because these two products together account for about 75% of the total milk, they will be analyzed separately.

Table 12 shows monthly variations in the quantity of fluid milk sold and the farm and retail prices over the period 1949-58.

TABLE 12. INDEXES OF MONTHLY VARIATIONS IN THE SALES OF FLUID MILK AND THE FARM AND RETAIL PRICES, CANADA, 1949 TO 1958

(Annual Average = 100)

	1949-58 Monthly Average		
Month	Fluid Milk Sales	Farm Prices	Retail Prices
Jan.	99.0	100.0	99.5
Feb.	94.3	100.0	99.5
Mar.	104.7	99.8	99.5
Apr.	99.6	99.5	99.5
May	101.7	98.5	99.5
June	97.5	98.6	100.0
July	97.5	98.6	100.0
Aug.	99.3	99.1	100.0
Sept.	99.0	99.8	100.0
Oct.	102.9	101.2	100.5
Nov.	100.8	102.1	101.4
Dec.	103.2	102.3	101.9

Source: Adapted from the D.B.S., The Dairy Review, Ottawa, Monthly.

Farm and retail prices for fluid milk show small seasonal variations. Retail prices are slightly lower than the average between January and May; during the summer they equal the annual average and at the end of the year they show a slight increase. The difference between the highest and the lowest retail price during the season is 2.4%.

Farm prices are the lowest between May and July and then follow the pattern of retail prices. Fluid milk sales show relatively larger variations. They are the lowest in February, when the total milk production is the lowest; then they increase sharply in March and reach their seasonal peak. During the summer months fluid milk sales are below their annual average and toward the end of the year they approach their second peak. There are two main reasons why farm and retail prices do not show any appreciable seasonal variations. One is, that the consumption is fairly stable and the other, that the farm and retail prices are regulated in some of the provinces by the Provincial Milk Boards. Especially with regard to farm prices, all provinces exert some degree of control in establishing a minimum price. In British Columbia and Ontario farm prices are fixed according to special formulae which take into account relevant economic factors, such as changes in

the general price level, changes in the price of factors of production, and the quantity of milk sold on the fluid market in relation to the total quantity of qualifying milk. In other provinces farm prices for fluid milk are negotiated between the producers and the distributors and once approved by the Milk Boards, cannot be changed without a new approval of the Boards.

Creamery butter is one of the dairy products which shows clear seasonal variations in production and in prices. Cheddar cheese and concentrated milk products show a similar pattern of seasonal variations.

Table 13 indicates the pattern of seasonal variations in production and prices of creamery butter over the decade 1949-58. The

TABLE 13. INDEXES OF MONTHLY VARIATIONS IN PRODUCTION AND FARM AND RETAIL PRICES FOR CREAMERY BUTTER, CANADA, 1949 TO 1958.

(Annual Average = 100)

Month	1949-58 Monthly Average		
	Production	Farm Price	Retail Price
Jan.	41.9	103.1	102.6
Feb.	36.4	103.1	103.1
Mar.	52.0	104.5	103.5
Apr.	85.1	99.7	102.6
May	132.5	97.1	97.7
June	178.7	96.6	96.9
July	166.4	96.9	96.8
Aug.	151.8	97.6	97.1
Sept.	131.9	98.6	98.2
Oct.	105.8	99.8	99.1
Nov.	66.4	101.4	100.2
Dec.	51.1	101.8	101.5

Source: Adapted from the D.B.S., The Dairy Review, Ottawa, Monthly.

production is well below the annual average from November until April, rises sharply above the average in May, reaches its peak in June as does milk production, and then declines sharply and reaches the annual average in October. The variations in farm and retail prices, although seasonally clearly marked, are much smaller than the variations in production. The reason why the farm prices show such stability is the federal government policy to support creamery butter prices, which has been in effect since 1949. In the absence of government price supports, overproduction of creamery butter which occurs each summer would certainly force prices down much more than has been the case with the support.

There have been in effect for some time support prices for

cheddar cheese and skimmed milk powder. This action has also had a stabilizing effect on farm prices for that part of milk used in manufacture of these two products. Milk used in manufacture of ice cream and concentrated milk products, other than skimmed milk powder, was not subject to any support and its prices were adjusted according to supply and demand conditions.

8. Year-to-year Variations in Farm and Retail Prices

Over the period under study, farm prices for milk utilized in various dairy products have shown considerable year-to-year variations. These changes in prices were caused by several factors such as annual production, availability of the product at certain periods, and domestic and foreign demand. On the whole, however, the average price for all dairy products has shown an upward trend. This upward trend has been well-pronounced since 1954, and at the end of 1958 the average farm prices were 15.8% higher than in 1949.

The farm prices for various dairy products, as well as their index numbers, are shown in Table 14.

The year-to-year fluctuations in retail prices for particular products did not always follow the corresponding farm prices. However, except for 1952, average retail prices for dairy products as a group followed an upward trend similar to the average farm prices for all dairy products, but the rise at retail was more pronounced. Annual fluctuations in retail prices of the main dairy products are shown in Table 15.

9. Measurement of the Price Spread

The estimates of price spreads on dairy products, as presented in this study, are based on average prices for Canada and relate to the decade 1949-58. In general, these estimates show farm-retail spread and the farmer's share of retail equivalent value. However, when wholesale or manufacturing prices are available, as for creamery butter and evaporated milk, then the gross spread is subdivided into marketing stages.

In addition to price spread estimates for the country as a whole, this study includes three estimates of price spreads on creamery butter and skimmed milk powder that apply to particular cities. Also, an attempt has been made to show the price spread and the average farmer's share for the whole dairy products group.

The Price Spread on Fluid Milk

The summary of calculations of farm-retail spreads on fluid milk are shown in Table 16. Over the whole period the farm and retail prices have been rising at unequal rates. The rise of the retail prices, however, has been faster and this made the farm-retail spread larger and

TABLE 14. AVERAGE PRICES OF DAIRY PRODUCTS SOLD BY FARMERS, CANADA, 1949 TO 1958

Year	All Products ($/cwt.)	Creamery Butterfat (¢/lb.)	Cheese Milk ($/cwt.)	Milk for Other Mfg. Products ($/cwt.)	Fluid Milk ($/cwt.)
1949	2.66	60.1	2.45	2.69	3.85
1950	2.63	56.2	2.23	2.61	3.91
1951	2.97	65.4	2.74	3.09	4.08
1952	2.90	61.8	2.16	2.76	4.39
1953	2.86	61.2	2.14	2.54	4.41
1954	2.84	60.6	2.20	2.52	4.37
1955	2.85	60.2	2.17	2.52	4.33
1956	2.90	59.8	2.47	2.59	4.32
1957	3.00	61.8	2.59	2.81	4.53
1958	3.08	66.0	2.60	2.88	4.62
		Price Relatives (1949 = 100)			
1949	100.0	100.0	100.0	100.0	100.0
1950	98.9	93.5	91.0	97.0	101.6
1951	111.7	108.8	111.8	114.9	106.0
1952	109.0	102.8	88.2	102.6	114.0
1953	107.5	101.8	87.3	94.4	114.5
1954	106.8	100.8	89.8	93.7	113.5
1955	107.1	100.2	88.6	93.7	112.5
1956	109.0	99.5	100.8	96.3	112.2
1957	112.8	102.8	105.7	104.5	117.7
1958	115.8	109.8	106.1	107.1	120.0

Source: Adapted from the D.B.S., Dairy Statistics, Ottawa, Annual.

TABLE 15. AVERAGE RETAIL PRICES OF DAIRY PRODUCTS, CANADA, 1949 TO 1958

Year	All Products	Creamery Butter	Plain Processed Cheese	Evaporated Milk	Fluid Milk
		(¢/lb.)	(¢/½-lb.)	(¢/16-oz. tin)	(¢/qt.)
1949		64.6	29.2	14.8	17.8
1950		60.3	29.0	14.6	18.3
1951		67.8	32.4	16.1	19.6
1952		66.2	33.8	16.4	21.1
1953		65.0	33.0	15.4	21.1
1954		64.0	32.6	15.4	21.1
1955		64.1	32.9	15.1	21.1
1956		63.5	33.7	14.8	21.2
1957		65.7	35.6	15.7	22.5
1958		69.2	35.9	16.2	23.2
		Price Relatives (1949 = 100)			
1949	100.0	100.0	100.0	100.0	100.0
1950	99.7	93.3	99.3	98.6	102.8
1951	108.6	105.0	111.0	108.8	110.1
1952	113.3	102.5	115.8	110.8	118.5
1953	112.4	100.6	113.0	104.1	118.5
1954	111.8	99.1	111.6	104.1	118.5
1955	111.9	99.2	112.7	102.0	118.5
1956	112.1	98.3	115.4	100.0	119.1
1957	118.1	101.7	121.9	106.1	126.4
1958	122.5	107.1	122.9	109.5	130.3

Source: Dominion Bureau of Statistics.

TABLE 16. SUMMARY OF CALCULATIONS OF FARM-RETAIL SPREAD ON FLUID MILK, CANADA, 1949 TO 1958

Calendar Year	Retail Price	Retail Equivalent Value of 100 lb. Farm Sale[a]	Farm Price	Farm-Retail Spread	Farmer's Share of Retail Value
	(¢/qt.)	($)	($/cwt.)	($)	(%)
1949	17.8	6.70	3.85	2.85	57.5
1950	18.3	6.89	3.91	2.98	56.7
1951	19.6	7.38	4.08	3.30	55.3
1952	21.1	7.94	4.39	3.55	55.3
1953	21.1	7.94	4.41	3.53	55.5
1954	21.1	7.94	4.37	3.57	55.0
1955	21.1	7.94	4.33	3.61	54.5
1956	21.2	7.98	4.32	3.66	54.1
1957	22.5	8.47	4.53	3.94	53.5
1958	23.2	8.73	4.62	4.11	52.9

a 100 pounds of milk equal 37.63 quarts, after deducting 3% for wastage.

Source: Adapted from the D.B.S., Dairy Statistics, Ottawa, Annual.

the farmer's share smaller. The main cause in the widening of the farm-retail spread has been the rising cost in the marketing operations of fluid milk which include assembly, processing (pasteurization and homogenization), bottling and distribution. In all these operations labour is a very important cost factor because in each of them it makes up a major part. Besides the labour, there are several other elements which make up part of the marketing costs and which have also added to the widening in the farm-retail spread. Among these expenses that contributed to the rising operating costs were containers, depreciation, property taxes, repairs and the use of more mechanical equipment, and advertising.

Of all dairy products, the farm-retail spread for fluid milk showed the biggest increase over the last decade. The increase in the spread for fluid milk was 44%, plain process cheese 34%, evaporated milk 11%, and creamery butter showed a decrease of 2%.

The Price Spread on Evaporated Whole Milk

The calculations of the farm-wholesale-retail spreads on evaporated milk are shown in Table 17. Over the period under study, the farm-retail spread on 100 pounds of milk going into the manufacture of evaporated milk averaged $4.00. The spread increased from $3.75 in 1949 to $4.37 in 1952, which was a record for the whole period, and then declined to $3.85 in 1956. Since then it has increased again. The farmer's share rose from 41.8% in 1949 to a maximum of 44.1% in 1951, then

TABLE 17. SUMMARY OF CALCULATIONS OF FARM-WHOLESALE-RETAIL SPREADS ON EVAPORATED MILK, CANADA, 1949 TO 1958

Calendar Year	Retail Price (¢/16-oz. tin)	Retail Equivalent Value of 100 lb. Farm Sale[a] ($)	Wholesale Equivalent Value of 100 lb. Farm Sale[b] ($)	Farm Price ($/cwt.)	Farm-Retail Spread ($)	Retailer's Share of Retail Value (%)	Farmer's Share of Retail Value (%)
1949	14.8	6.44	5.48	2.69	3.75	14.9	41.8
1950	14.6	6.35	5.39	2.61	3.74	15.1	41.1
1951	16.1	7.00	6.09	3.09	3.91	13.0	44.1
1952	16.4	7.13	5.96	2.76	4.37	16.4	38.7
1953	15.4	6.70	5.52	2.54	4.16	17.6	37.9
1954	15.4	6.70	5.52	2.52	4.18	17.6	37.6
1955	15.1	6.57	5.35	2.52	4.05	18.6	38.4
1956	14.8	6.44	5.35	2.59	3.85	16.9	40.2
1957	15.7	6.83	5.61	2.81	4.02	17.9	41.1
1958	16.2	7.04	5.70	2.88	4.16	19.0	40.9

a 2.3 lb. whole milk equals 1 lb. evaporated milk. Canada Department of Agriculture, Canada Weights, Measures and Conversion Factors for Agricultural Products.

b Calculated from average wholesaler's selling price in Ontario and Quebec.

Source: Adapted from the D.B.S., Dairy Statistics, Ottawa, Annual.

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it dropped to 37.6% in 1954, and by 1958 it was fairly close to a point where it had been at the beginning of the decade. The changes in the farmer's share were caused by the fluctuations in farm and retail prices that have occurred throughout.

With regard to the spread itself, it would be of interest to mention its major causes. In order to make one pound of evaporated milk, 2.3 pounds of fluid milk have to be used, and in addition, this milk has to be put through the manufacturing process and then canned, hermetically sealed, packed in shipping cases, and transported to different places for distribution through various commercial channels. In all these operations the big items of expense are packing materials and supplies, wages and salaries, transportation, depreciation, taxes and advertising.

In breaking the farm-retail spread into farm-wholesale and wholesale-retail, one observation should be made - that over the whole decade, the farm-wholesale spread did not show any substantial increase, whereas the wholesale-retail spread increased from $0.96 in 1949 to $1.34 in 1958. This means that the retail outlets have increased appreciably their markup on the sale of evaporated milk.

The Price Spread on Plain Processed Cheese

From Table 18 one can see that for the most part, farm and retail prices for processed cheese follow a pattern similar to that of evaporated milk. The only difference is that retail prices for processed cheese have shown a more pronounced upward trend and that made the spread larger and the farmer's share smaller over the whole decade.

The farmer's share was 39.5% in 1949, then it dropped to 30.1% in 1952. In 1953 it started to rise again and in 1956 it was 34.5%. In 1957 and 1958 it has shown a slight drop again. The farmer's share on processed cheese is the smallest of all the principal dairy products. One of the reasons is that the processed cheese has to go through double processing operations. First, a cheddar cheese has to be made and then the cheddar is processed again with addition of several ingredients.

The Price Spread on Creamery Butter

The summary of calculations on creamery butter for Canada is shown in Table 19. Although both the farm and retail prices for creamery butter have shown wide fluctuations over the decade, and both have shown an upward trend, the increase in farm prices, particularly in 1958, was greater than in retail prices, with the result that the farmer's share was larger in 1958 than in 1949. Creamery butter is indeed the only dairy product which has shown an increase in the farmer's share over the whole decade. In 1949 the farmer's share was 76.3%, then it increased sharply to 79.1% in 1951, and the following year it dropped to 76.5%. Since 1953 the farmer's share increased again and has remained at about 77% until 1958, when it rose to 78.2%.

Over the entire period, the farm-retail spread on creamery butter has remained fairly stable and averaged 18¢ per pound. The subdivision of this total spread into marketing stages shows that the

TABLE 18. SUMMARY OF CALCULATIONS OF FARM-RETAIL SPREAD ON PLAIN PROCESS CHEESE, CANADA, 1949 TO 1958

Calendar Year	Retail Price	Retail Equivalent Value of 100 lb. Farm Sale of Cheese Milk[a]	Farm Price for Cheese Milk	Farm-Retail Spread	Farmer's Share of Retail Value
	(¢/½-lb.)	($)	($/cwt.)	($)	(%)
1949	29.2	6.20	2.45	3.75	39.5
1950	29.0	6.16	2.23	3.93	36.2
1951	32.4	6.88	2.74	4.14	39.8
1952	33.8	7.18	2.16	5.02	30.1
1953	33.0	7.00	2.16	4.84	30.6
1954	32.6	6.92	2.20	4.72	31.8
1955	32.9	6.98	2.17	4.81	31.1
1956	33.7	7.15	2.47	4.68	34.5
1957	35.6	7.56	2.59	4.97	34.4
1958	35.9	7.62	2.60	5.02	34.1

a Conversion factor for process cheese: 4.71 lbs. of cheese milk equals ½-lb. process cheese.

Source: Adapted from the D.B.S., Dairy Statistics, Ottawa, Annual.

TABLE 19. SUMMARY OF CALCULATIONS OF FARM-WHOLESALE-RETAIL SPREADS ON CREAMERY BUTTER, CANADA, 1949 TO 1958

Calendar Year	Retail Price (¢/lb.)	Retail Equivalent Value of 1 lb. Butterfat[a] (¢)	Wholesale Equivalent Value of 1 lb. Butterfat[b] (¢)	Farm Price Butterfat (¢/lb.)	Farm-Retail Spread (¢)	Retailer's Share of Retail Value (%)	Farmer's Share of Retail Value (%)
1949	64.6	78.8	75.6	60.1	18.7	4.1	76.3
1950	60.3	73.6	70.8	56.2	17.4	3.8	76.4
1951	67.8	82.7	79.3	65.4	17.3	4.1	79.1
1952	66.2	80.8	76.1	61.8	19.0	5.8	76.5
1953	65.0	79.3	74.4	61.2	18.1	6.2	77.2
1954	64.0	78.1	73.1	60.6	17.5	6.4	77.6
1955	64.1	78.2	72.8	60.2	18.0	6.9	77.0
1956	63.5	77.5	71.5	59.8	17.7	7.7	77.2
1957	65.7	80.2	74.1	61.8	18.4	7.6	77.1
1958	69.2	84.4	78.7	66.0	18.4	6.8	78.2

a .82 lb. butterfat equals 1 lb. butter.

b Wholesale price is for Montreal only.

Source: Adapted from the D.B.S., Dairy Statistics, Ottawa, Annual.

wholesale-retail spread has been increasing, while the farm-wholesale spread has been decreasing. The retailer's share of the retail price increased from 4.1% in 1949 to 6.8% in 1958.

The Price Spread on Creamery Butter - Montreal

The general trends in farm and retail prices for creamery butter in Montreal and Winnipeg have been very similar to those for Canada as a whole. In 1950 there was a general drop in prices of creamery butter at all levels - manufacturer, wholesaler, and retailer. The following year butter prices increased sharply, reached their first peak in the decade and then continued to decline until 1956. During 1957 and particularly 1958, butter prices started to rise rather sharply, and in 1958 the retail and farm prices reached their highest level in the whole decade.

The summary of calculations of farm-manufacturer-wholesale-retail spreads on creamery butter for Montreal are shown in Table 20. Over the period under study, the farmer's share increased from 80.3% in 1949 to 83.3% in 1958. The farm-retail spread shows a downward trend, declining from 15.6¢ per pound in 1949 to 13.9¢ per pound in 1958. This general decline in farm-retail spread was caused by the decline in farm-manufacturer spread. The wholesale-retail spread, which has remained fairly stable for most of the period, increased significantly in 1958.

The Price Spread on Creamery Butter - Winnipeg

Table 21 illustrates the annual movements of butter prices in Winnipeg over the decade 1949-58. Whereas there has been a general increase in the farmer's share on creamery butter for Canada as a whole, and for Montreal as a particular area, the farmer's share for the Winnipeg area was the same at the end of the decade as it was at the beginning. Comparisons of the retail, wholesale and farm prices in these two cities show that during the whole decade, the retail prices of creamery butter were almost the same in both cities. Montreal wholesale prices were higher at the beginning of the decade by about 2¢ per pound, and at the end of the decade, Winnipeg wholesale prices were higher by about 2¢ per pound. Farm prices for butterfat in Manitoba and in the Prairies in general have been much lower than in Quebec. This difference in farm prices between two regions accounts for the difference in farm-retail spread between Montreal and Winnipeg. Also, there has been a difference in trends of farm-wholesale and wholesale-retail spreads between Winnipeg and Montreal. Over the decade, the farm-wholesale spread in Winnipeg has been generally increasing and the wholesale-retail spread decreasing. In Montreal, however, the farm-wholesale spread has been decreasing and wholesale-retail spread increasing. Although the farm prices for creamery butterfat are much lower in Winnipeg than in Montreal, Winnipeg retail prices are no lower.

The Price Spread on Skimmed Milk Powder - Toronto

There are no published retail prices for skimmed milk powder for Canada, and in view of that, full analysis of the farm-retail spread cannot be presented. However, on the basis of available retail prices

TABLE 20. SUMMARY OF CALCULATIONS OF FARM-MANUFACTURER-WHOLESALE-RETAIL SPREADS ON CREAMERY BUTTER, GRADE 1, MONTREAL, 1949 TO 1958

Calendar Year	Retail Price (¢/lb.)	Retail Equivalent Value of 1 lb. Butterfat[a] (¢)	Wholesale Prints Equivalent Value of 1 lb. Butterfat (¢)	Wholesale Solids Equivalent Value of 1 lb. Butterfat (¢)	Manufacturer's Equivalent Value of 1 lb. Butterfat (¢)	Farm Price Butterfat (¢/lb.)	Farm-Retail Spread (¢)	Farmer's Share of Retail Value (%)
1949	64.9	79.2	75.6	74.2	73.3	63.6	15.6	80.3
1950	60.2	73.4	70.8	69.3	68.4	58.6	14.8	79.8
1951	67.5	82.4	79.3	78.0	76.7	67.8	14.6	82.3
1952	64.7	78.9	76.1	75.1	74.4	64.3	14.6	81.5
1953	63.6	77.6	74.4	73.2	72.6	63.3	14.3	81.6
1954	62.6	76.4	73.1	72.5	71.9	63.2	13.2	82.7
1955	62.0	75.6	72.8	71.7	71.1	62.6	13.0	82.8
1956	61.3	74.8	71.5	70.2	69.5	61.7	13.1	82.5
1957	63.5	77.5	74.1	72.6	71.6	63.6	13.9	82.0
1958	68.2	83.2	78.7	77.5	76.4	69.3	13.9	83.3

a .82 lb. butterfat equals 1 lb. butter.

Source: Adapted from the D.B.S., Dairy Statistics, Ottawa, Annual.

TABLE 21. SUMMARY OF CALCULATIONS OF FARM-WHOLESALE-RETAIL SPREADS ON CREAMERY BUTTER, GRADE 1, WINNIPEG, 1949 TO 1958

Calendar Year	Retail Price (¢/lb.)	Retail Equivalent Value of 1 lb. Butterfat[a] (¢)	Wholesale Prints Equivalent Value of 1 lb. Butterfat (¢)	Farm Price Butterfat (¢/lb.)	Farm-Retail Spread (¢)	Farmer's Share of Retail Value (%)
1949	63.5	77.5	74.3	58.6	18.9	75.6
1950	58.8	71.7	68.4	53.0	18.7	73.9
1951	66.6	81.3	78.4	62.7	18.6	77.1
1952	64.5	78.7	76.0	58.1	20.6	73.8
1953	63.9	78.0	74.7	57.5	20.5	73.7
1954	62.9	76.7	73.7	57.0	19.7	74.3
1955	62.4	76.1	73.7	56.8	19.3	74.6
1956	61.6	75.2	73.2	56.7	18.5	75.4
1957	64.2	78.3	76.5	58.6	19.7	74.8
1958	68.1	83.1	80.5	62.7	20.4	75.5

a .82 lb. butterfat equals 1 lb. butter.

Source: Adapted from the D.B.S., Dairy Statistics, Ottawa, Annual.

for the Toronto area for 1958, a measurement of the farm-retail spread for that city is made.

The retail prices for skimmed milk powder at four Toronto chain stores remained stable during the year, averaging close to 40¢ per pound of skimmed milk powder. The value of the milk equivalent in one pound of skimmed milk powder is about 8¢. On the basis of the above-mentioned price, the farmer's share would be about 20% and the farm-retail spread about 32¢. This spread covers the costs of processing, containers and distribution.

The Spread on the Dairy Products Group as a Whole

Table 22 summarizes the equivalent farm and retail values for all dairy products bought each year by the average urban Canadian family over the decade 1949 to 1958. The retail and farm values of the dairy products were calculated from retail and farm prices for fluid milk, evaporated whole milk, plain processed cheese, and creamery butter. The quantity of each dairy product that was included in the food basket was determined from the Dominion Bureau of Statistics survey done in 1953.[1] The products for which retail prices were not available are represented in the group by the products most closely related to them for which retail prices were available.

Over the period under study, the retail value for dairy products bought annually by the average family increased from $164.25 to $197.90, while the equivalent farm value for these products increased from $96.73 to $110.80. The increase in retail value was 20.5% and increase in farm value was 14.5%. The larger increase in retail value caused the drop of the farmer's share for all milk used in the various dairy products from 58.9% in 1949 to 55.9% in 1958.

10. Comparisons with the United States

Comparisons with the United States were made on the basis of the farmer's share for particular dairy products and for the whole group taken together. These are presented in Table 23. The figures shown in Table 23 cannot be compared directly in spite of apparent similarity in names of the products. There are differences in component parts of products, calculations, conversion and other factors, which bring different results for apparently similar products. Having in mind all the differences, we can make comparisons in a general way only.

In both countries, farmer's shares of retail prices of dairy products show downward trends that go on for several years. However, the U.S. trend has been more pronounced than the Canadian. Canadian creamery butter is the only product which has shown an increase in the farmer's share over the decade. On the whole, the Canadian farmer's share for the dairy products group is higher than in the United States.

1 D.B.S., Urban Family Food Expenditure, 1953, Reference Paper No. 60.

TABLE 22. SUMMARY OF FARM-RETAIL SPREADS, DAIRY PRODUCTS GROUP, CANADA, 1949 TO 1958

Calendar Year	Retail Value[a] ($)	Farm Value[b] ($)	Farm-Retail Spread ($)	Farmer's Share of Retail Cost (%)
1949	164.25	96.73	67.52	58.9
1950	162.89	94.42	68.47	58.0
1951	178.26	104.58	73.68	58.7
1952	185.03	104.03	81.00	56.2
1953	182.52	103.04	79.48	56.4
1954	181.51	102.32	79.19	56.4
1955	181.43	101.58	79.85	56.0
1956	181.59	102.22	79.37	56.3
1957	191.32	106.68	84.64	55.7
1958	197.90	110.80	87.10	55.9

a Estimates of annual expenditures for all dairy products made by the average Canadian urban family.

b Total amount paid to farmers for equivalent quantities of milk used in manufacture of all dairy products that were consumed by urban families.

Source: Adapted from the D.B.S., Urban Family Food Expenditure, 1953, Reference Paper No. 60, and Dairy Statistics, Ottawa, Annual.

TABLE 23. COMPARISON OF FARMER'S SHARES FOR DAIRY PRODUCTS, CANADA AND THE UNITED STATES, 1949 TO 1958

Calendar Year	CANADA					UNITED STATES				
	Fluid Milk	Creamery Butter	Plain Processed Cheese	Evaporated Milk	Dairy Products	Fluid Milk	Creamery Butter	American Processed Cheese	Evaporated Milk	Dairy Products
	(per cent)									
1949	57	76	39	42	59	51	72	52	45	51
1950	57	76	36	41	58	50	72	54	48	50
1951	55	79	40	44	59	51	74	58	51	52
1952	55	76	30	39	56	51	74	59	53	53
1953	55	77	31	38	56	49	72	52	45	49
1954	55	78	32	38	56	46	70	48	43	47
1955	54	77	31	38	56	45	69	49	44	46
1956	54	77	34	40	56	45	71	50	44	47
1957	53	77	34	41	56	45	70	50	43	46
1958	53	78	34	41	56	44	69	48	41	45

Source: U.S.D.A., Farm-Retail Spreads for Food Products, Misc. Pub. No. 741; The Marketing and Transportation Situation, January 1959; and this study, Tables 16, 17, 18, 19 and 22.

POULTRY AND EGGS

Poultry

Characteristics of Poultry and its Use

The most striking characteristic of the Canadian poultry industry over the past 10 years has been its growth. In 1958 the total production of poultry was 96% higher than in 1949, and this strong upward trend is still continuing. The growth of poultry production, and in particular that of chicken and turkey broilers, was the greatest of any agricultural commodity over the period under study.

Another feature of the poultry and egg industry that should also be mentioned is its changing character. For many years the production of eggs and poultry was a sideline activity on nearly all Canadian farms. Small poultry flocks were maintained mainly to furnish farm families with eggs, poultry meat for festive occasions, and incidental income from the sale of small surpluses over home uses. Chicken meat was largely a by-product of egg production. And, although there are still many farms that maintain small flocks on a non-commercial or semi-commercial basis, specialization in broiler and egg production is now firmly established in many regions of the country and it is continuously increasing. The specialization is particularly evident in the chicken and turkey broiler industry, where breeding, hatching, mixing of feed, raising and marketing is carried out by different firms. This trend towards differentiation and specialization has necessitated the opposite trend, particularly in Ontario and Quebec, towards at least partial integration or contract farming. The essence of contract farming is that processors or feed companies encourage the producers to enter the broiler business by advancing them chicks and feed and advising them on husbandry and management. The producers are paid a fixed fee and the processors do the processing and marketing. Such a co-ordination of various functions facilitated the growth of the large-scale commercial operations of the broiler industry, which in turn have been made possible by the application of scientific, technological and economic findings. The results have been increased production, a year-round operation, and at the same time, lower operating costs.

Alternate Uses

In the past, poultry was sold on a live or New York dressed basis (only the blood and feathers removed). At present, poultry is available in a variety of forms. Generally all chicken and turkey broilers are sold ready-to-cook, whereas fowl and heavy chickens are still, to some extent, retailed on a New York dressed basis. Usually chicken broilers are sold fresh and chilled and the heavy turkeys are sold as frozen whole birds. Also cut up parts of chicken and turkey, frozen chicken and turkey pies, frozen fried chicken and roast turkey dinners, canned boneless poultry meat, chicken soups and mixtures with other foods such as chicken and noodles and chicken and vegetables, are

becoming increasingly prominent on the market. Another important outlet for poultry is barbecue restaurants. During the last 10 years, progress in the production of ready-to-cook products has been rapid. In 1950 only four million pounds of poultry was sold through registered stations on an eviscerated basis, and in 1958 this quantity increased to 250 million pounds.

Supply and Disposition

Table 1 shows the supply and disposition of fowl and chicken for the period 1949 to 1958. Over the period as a whole, the production of fowl and chicken averaged 80% of the total production of poultry, the remainder being accounted for by turkeys, ducks and geese. The production of chicken and fowl showed an almost continuous increase and in 1958 it was 81% higher than in 1949. Table 1 shows also that the total domestic disappearance followed fairly closely the rapidly growing production. Per capita consumption increased rapidly, and in 1958 was 57.3% higher than in 1949.

The greatest development in this period has come about in the production of chicken broilers, but this cannot be seen from Table 1 because the estimates on production do not show chickens, and especially broilers, separate from fowl and heavier chickens and, therefore, do not reflect the clear picture of the growth in broiler production. However, some indication of the development of the broiler industry may be obtained by referring to marketings of chickens under four pounds through the registered stations. Table 2 illustrates the marketings of chicken broilers, turkeys, fowl and chickens over four pounds through the registered stations. The biggest increase occurred in the marketing of broilers. In 1958 the registered stations marketed almost six times the number of broilers and four times the number of turkeys marketed in 1953. For the same period, the marketing of fowl and heavier chickens remained substantially unchanged.

Another important development in the marketing of poultry is the increased proportion of poultry marketed through the registered stations. While in 1951, the first year for which such estimates are available, only about a quarter of the poultry produced was marketed through registered stations, in 1958 the registered stations handled about 60% of the total production.

Seasonal Variations

Table 3 shows monthly variations in marketings and farm prices of fowl and chickens for Canada over the 1951-1958 period. While there has been a considerable variation in marketings ranging from 53% above the annual average in October to 37% below the annual average in February, the average price of fowl and chickens has remained fairly stable the year round, ranging only from 2% to 3% above average in the first half of the year, to about 2% to 4% below average in the autumn.

The seasonal pattern of broiler prices and marketings is changing and this is shown in Table 4. In the period 1953-55, the marketings reached a peak in July and a low in January; in the period

TABLE 1. FOWL AND CHICKENS, SUPPLY AND DISPOSITION, CANADA, 1949 TO 1958

(Dressed Weight Basis)

Calendar Year	Stocks at Jan. 1	Production	Imports	Total Supply	Exports	Stocks at Dec. 31	Domestic Dis-appearance	Per Capita Consumption Dressed Weight	Per Capita Consumption Eviscerated Weight
	(thousand pounds)							(pounds)	
1949	13,106	245,499	3	258,608	15,477	20,398	222,733	16.7	12.9
1950	20,398	231,785	654	252,837	4,933	13,071	234,833	17.1	13.2
1951	13,071	284,238	4,531	301,840	1,276	26,888	273,676	19.5	15.0
1952	26,888	326,015	2,961	355,864	4,620	14,412	336,832	23.3	17.9
1953	14,412	309,392	5,945	329,749	440	22,325	306,984	20.7	15.9
1954	22,325	320,358	5,163	347,846	651	16,635	330,560	21.6	16.6
1955	16,635	380,026	4,614	401,275	255	16,364	384,656	24.6	18.9
1956	16,364	401,585	11,715	429,664	137	27,864	401,663	25.0	19.2
1957	27,864	409,926	6,581	444,371	309	26,169	417,893	25.2	19.4
1958	26,169	444,289	12,381	482,839	421	33,457	448,961	26.3	20.3

Source: D.B.S., Production of Poultry and Eggs, 1958.

TABLE 2. INDEX NUMBERS OF MARKETINGS OF BROILERS, FOWL, CHICKEN (4 LB. AND OVER) AND TURKEYS THROUGH REGISTERED STATIONS, CANADA, 1953 TO 1958

(1953 = 100)

	1953	1954	1955	1956	1957	1958
Broilers	100	166	204	345	420	588
Chickens, 4 lb. and over	100	100	74	95	79	94
Fowl	100	117	125	128	142	125
Turkeys	100	153	175	254	290	370

Source: Adapted from Poultry Products Market Review, Canada Department of Agriculture, 1958.

TABLE 3. INDEXES OF MONTHLY MARKETINGS AND PRICES, FOWL AND CHICKENS, CANADA, 1951 TO 1958

(Annual Average = 100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Marketings	71	63	67	72	89	93	101	118	134	153	139	101
Farm Prices	102	103	103	102	101	103	102	101	99	98	96	100

Source: Adapted from Poultry Products Market Review, Annual, Canada Department of Agriculture, and Agriculture Division, Dominion Bureau of Statistics.

TABLE 4. INDEXES OF MONTHLY MARKETINGS (CANADA) AND FARM PRICES (ONTARIO) OF CHICKENS UNDER 4 POUNDS (BROILERS), SELECTED PERIODS, 1953-55 AND 1956-58

(Annual Average = 100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Marketings												
1953-55	61	70	86	84	110	123	127	120	110	110	110	89
1956-58	78	75	82	87	101	99	104	111	118	125	126	96
Farm Prices												
1953-55	99	98	100	109	105	103	102	104	106	98	88	89
1956-58	98	103	106	108	107	109	111	108	90	89	82	87

Source: Adapted from Poultry Products Market Review, Annual, Canada Department of Agriculture.

1956-58, there was a shifting of heavy marketings from the early summer months to late summer and autumn. However, the overall picture for these two periods was similar, that is, that the marketings were below the annual average from the middle of December to the middle of April, and above average from May to November. The prices to producers are above the annual average for the first eight to nine months of the year and below for the remainder of the year.

Regional Characteristics of the Poultry Industry

Proximity to the large consuming centres, location, climate and feed supply have made for some regional differences in production and marketing of poultry. However, with the application of scientific and technological findings to the large-scale commercial production of chicken and turkey broilers, the limiting factors became less significant. In the production of broilers, Ontario, where this industry became established about 10 years ago, emerged as the biggest producing province, followed by Quebec, British Columbia, the Prairie Provinces and the Maritimes. Over the last few years, Ontario accounted for about 64%, Quebec close to 18%, British Columbia 9%, the Prairies 7% and the Maritimes 2% of the total broiler production. The production of broiler-type chicks is still increasing rapidly, and lately the Prairies show the highest rate of increase in Canada. In the production of turkeys, the central provinces are followed closely by the Prairies and these two regions together account for about 90% of the total production.

Marketing of Poultry

There has been a considerable change over the last 10 years in the channels for selling poultry. While the old practice of farmers selling directly to consumers is still followed on public markets and through private connections, the great bulk of poultry marketing is done through registered poultry stations. Usually, the processors who operate the registered poultry stations buy live birds from the producers and process them quickly after delivery to the processing plant. At the processing plant the birds are assembled, killed, dressed, eviscerated and chilled in water with crushed ice. Then the birds are graded, weighed and placed in plastic bags. So graded and weighed poultry is inspected by the inspectors of the Canada Department of Agriculture. After the poultry is graded, weighed and bagged, it must be refrigerated again until it is shipped to market or frozen. The bulk of chicken broilers is sold fresh; a much larger proportion of turkeys is being sold frozen. Most of the poultry is being sold directly by the processors, who also act as wholesalers, to retail outlets and barbecue restaurants. There are, however, poultry processors, particularly processors of turkeys, who do marketing through jobbers.

Grading

All poultry processing, eviscerating and grading stations, which meet the requirements for sanitation and operational control, are registered by the Canada Department of Agriculture. They, as well as the producers who raise the poultry on their own farms, are eligible to

grade poultry.

Four factors are taken into account in grading the poultry and these are: condition, conformation, flesh, fat and dressing. National grade standards have been established under the Livestock and Livestock Products Act for dressed and eviscerated poultry. These standards apply on products moving in interprovincial or export trade. There are also provincial regulations requiring the grading of poultry products for purchase and sale within the provinces. The retail sale of dressed or eviscerated poultry by grade in larger centres is required by all provinces except New Brunswick and Newfoundland.

Measurement of the Price Spread and Farmer's Share

In this study measurements are made of the farm-retail price spread for broilers[1] for Canada and the farm-wholesale-retail spread for two cities - Toronto and Winnipeg. The price spread for Canada covers the period 1953-58, because data are not available for earlier years.

(a) The Price Spread for Broilers - Canada, 1953-58

Broilers are one of few products which show a well-pronounced downward trend in prices at both consumer and producer levels. (Table 5.) The farm-retail spread shows a narrowing tendency. This narrowing of the spread was the result of the technological and commercial developments in the industry which have already been mentioned. Between 1953 and 1958 the farmer's share of the retail price dropped from 62.7% to 57.6%.

(b) The Price Spreads for Toronto and Winnipeg

The retail, wholesale and farm prices, price spreads and farmer's share for these two cities are for two years, as data for previous years are not available.

Table 6 shows monthly prices at three levels for the Toronto area. The price movements for Toronto are in line with the general pattern of price variation and marketings for the whole country. When marketings are light the prices are increasing, and when marketings approach their peak, which is in the last three months of the year, the prices are then the lowest.

The monthly farm and wholesale prices for Winnipeg have shown rather remarkable stability, while the retail prices have moved up and down more frequently. With this relatively new product, it is likely that retail stores frequently offer broilers as a special, in order to attract customers. The calculations of Winnipeg price spreads on ready-to-cook broilers are shown in Table 7.

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1 The retail prices for fowl are not available and, therefore, the measurement of the price spread for fowl has not been made.

TABLE 5. SUMMARY OF CALCULATIONS OF FARM-RETAIL PRICE SPREAD ON BROILERS (READY-TO-COOK), CANADA, 1953 TO 1958.

Calendar Year	Retail Price (¢/lb.)	Retail Equivalent Value of 1 lb. Live[a] (¢)	Farm Price Live (¢/lb.)	Farm-Retail Spread (¢)	Farmer's Share of Retail Value (%)
1953	63.6	46.4	29.1	17.3	62.7
1954	56.1	41.0	24.1	16.9	58.8
1955	57.2	41.8	26.6	15.2	63.6
1956	52.8	38.5	23.0	15.5	59.7
1957	52.0	37.9	21.8	16.1	57.5
1958	51.1	37.3	21.5	15.8	57.6

a 1 lb. live = .73 lb. eviscerated (ready-to-cook).

TABLE 6. SUMMARY OF CALCULATIONS OF FARM-WHOLESALE-RETAIL PRICE SPREADS ON BROILERS (READY-TO-COOK), TORONTO, 1957 AND 1958.

Month	Retail Price (¢/lb.)	Retail Equivalent Value of 1 lb. Live[a] (¢)	Wholesale Equivalent Value of 1 lb. Live (¢)	Farm Price Live (¢/lb.)	Farm-Retail Spread (¢)	Farmer's Share of Retail Value (%)
1957						
Jan.	46.5	33.9	25.0	19.0	14.9	56.0
Feb.	46.5	33.9	26.8	21.5	12.4	63.4
Mar.	47.5	34.7	27.4	22.1	12.6	63.7
Apr.	49.3	36.0	28.4	23.1	12.9	64.2
May	49.6	36.2	28.2	21.8	14.4	60.2
June	48.8	35.6	28.2	21.4	14.2	60.1
July	50.6	36.9	30.4	23.7	13.2	64.2
Aug.	54.6	39.8	28.4	22.3	17.5	56.0
Sept.	51.1	37.3	27.7	21.3	16.0	57.1
Oct.	48.9	35.7	26.6	20.5	15.2	57.4
Nov.	45.7	33.4	25.6	19.5	13.9	58.4
Dec.	46.8	34.2	26.1	20.4	13.8	59.6
1958						
Jan.	47.0	34.3	26.9	21.1	13.2	61.5
Feb.	50.8	37.1	28.1	22.7	14.4	61.2
Mar.	47.5	34.7	28.5	23.1	11.6	66.5
Apr.	50.3	36.7	28.8	23.5	13.2	64.0
May	49.8	36.6	29.1	24.0	12.6	65.6
June	52.1	38.0	30.7	25.0	13.0	65.8
July	53.5	39.1	30.3	24.5	14.6	62.6
Aug.	52.3	38.2	27.8	21.3	16.9	55.8
Sept.	47.3	34.5	25.5	19.5	15.0	56.5
Oct.	45.7	33.4	23.2	17.3	16.1	51.8
Nov.	37.5	27.4	22.3	16.0	11.4	58.4
Dec.	38.8	28.3	21.6	15.9	12.4	56.2

a 1 lb. live = .73 lb. ready-to-cook.

Source: Canada Department of Agriculture, Poultry Products Market Report, Weekly.

TABLE 7. SUMMARY OF CALCULATIONS OF FARM-WHOLESALE-RETAIL PRICE SPREADS ON BROILERS (READY-TO-COOK), WINNIPEG, 1957 AND 1958.

Month	Retail Price	Retail Equivalent Value of 1 lb. Live[a]	Wholesale Equivalent Value of 1 lb. Live	Farm Price Live	Farm-Retail Spread	Farmer's Share of Retail Value
	(¢/lb.)	(¢)	(¢)	(¢/lb.)	(¢)	(%)
1957						
Jan.	55.7	40.7	35.0	23.0	17.7	56.5
Feb.	52.0	38.0	29.9	23.0	15.0	60.5
Mar.	54.0	39.4	31.4	22.8	16.6	57.9
Apr.	55.6	40.6	31.4	23.0	17.6	56.7
May	54.7	39.9	31.4	23.0	16.9	57.6
June	55.2	40.3	31.4	23.0	17.3	57.1
July	57.7	42.1	31.4	23.0	19.1	54.6
Aug.	56.3	41.1	31.4	23.0	18.1	56.0
Sept.	57.9	42.3	31.4	23.0	19.3	54.4
Oct.	55.9	40.8	31.4	22.0	18.8	53.9
Nov.	54.8	40.0	31.4	22.0	18.0	55.0
Dec.	54.2	39.6	31.4	22.0	17.6	55.6
1958						
Jan.	56.3	41.1	31.4	22.0	19.1	53.5
Feb.	55.0	40.2	31.1	22.0	18.2	54.7
Mar.	54.7	39.9	30.3	22.0	17.9	55.1
Apr.	57.4	41.9	30.3	22.3	19.6	53.2
May	58.1	42.4	30.3	23.0	19.4	54.2
June	57.2	41.8	30.3	23.0	18.8	55.0
July	58.6	42.8	30.3	23.0	19.8	53.7
Aug.	57.6	42.0	30.9	22.5	19.5	53.6
Sept.	58.0	42.3	31.4	22.5	19.8	53.2
Oct.	53.1	38.8	31.4	22.5	16.3	58.0
Nov.	49.2	35.9	31.4	22.5	13.4	62.7
Dec.	50.6	36.9	31.4	22.5	14.4	61.0

a 1 lb. live = .73 lb. ready-to-cook.

Source: Canada Department of Agriculture, Poultry Products Market Report, Weekly.

Comparisons with the United States

In making comparisons of the Canadian broiler industry with the United States, one must keep in mind the scale of operations of that industry in the United States. In 1957 slightly less than 700 commercial plants handled at least 75% of all poultry sold from all farms in the United States, and approximately 75 of these plants averaged more than 15 million pounds of live poultry annually.

In spite of their larger operations, the United States broiler growers, processors and merchandisers showed only slightly higher efficiency than their Canadian counterparts. Generally the United States retail and farm prices for broilers are lower, the farm-retail spread is almost the same in both countries, and the farmer's share in the United States is lower by about 2% than in Canada.

Eggs

Description of the Product

The egg is a biological structure intended by nature for reproduction of the chicken. It is also one of the most nutritious and versatile of human foods. An egg is a perishable commodity which begins to lose its quality after it is laid, even if it is cooled, packed and marketed promptly. Keeping temperature and humidity conditions at an optimum level retards this loss in quality to a large degree. Producer, wholesaler and retailer must all handle eggs properly to maintain egg quality until it reaches the ultimate consumer. The eggs are graded according to specified qualities. Quality factors may be divided into two general groups: exterior quality factors, apparent from external observations; and interior quality factors which involve the contents of the egg. To ascertain interior quality, each egg has to be candled individually. Research is underway to find an acceptable mass candling method, but to date in Canada, eggs are handled individually.

Alternate Uses

Eggs are used in the form of shell eggs or dried and frozen egg products. Shell eggs are the most common, and the great bulk of the production is being merchandized in that form. Of total egg production, only 5% goes for processing purposes, that is, for the manufacture of dried eggs and frozen egg products.

(a) Dried Eggs

This product is prepared from the raw, broken-out egg. A large proportion of the eggs dried in Canada are whole eggs, but increasing quantities are of the separated yolks and whites.

Approximately 95% to 98% of dried egg products are used in the baking trade and particularly by the ready cake mix manufacturers. The

remainder is used domestically and by the candy manufacturers. The production of dried eggs is about one million pounds annually.

(b) Frozen Egg Products

Eggs are frozen in various states, either as whole eggs (plain or fortified), yolks (plain, sugared or salted), or as frozen egg whites. Frozen eggs are used mainly by the baking trade, candy manufacturers, frozen dessert manufacturers, soup manufacturers, manufacturers of doughnut flour, pastries, ice cream, mayonnaise and salad dressing. They are also used in pharmaceutical products, as well as for leather tanning, lithographing, shampoos and by the cork industry.

The production of frozen egg products has varied considerably during the period under study, from a low of 10.9 million pounds in 1951, to an all-time record of 25.6 million pounds in 1957. The average annual production for the whole period was at a level of 16.7 million pounds.

Supply and Disposition

Table 8 gives a summary of supply and disposition of eggs in Canada for the period 1949 to 1958. The decline in production between 1949 and 1951 was caused, to a large extent, by the termination of egg contracts with the United Kingdom in 1949, in terms of which Canada was supplying large quantities of eggs during the war years and immediately after. In 1952, however, the production of eggs showed a considerable increase over 1951 and there has been an annual increase in each succeeding year. With the termination of egg contracts, the export of eggs dropped sharply in 1950 and has never since approached the wartime and early postwar level. However, the drop in exports has been compensated by the increased domestic disappearance, which in 1958 was 64% higher than that of 1949.

Eggs are sold both by the producers themselves and through registered grading stations. Table 9 shows the trend in the proportion of eggs marketed through the registered egg grading stations in Canada compared with the total production. In 1949 54.4% of eggs marketed went through the registered grading stations, and in 1958 this proportion fell to 44.9%. The remainder are either consumed on the farms, used for hatching, or sold directly to the consumers and retail outlets by the producers who carry out their own candling and grading.

During the past 10 years, improvement in feeding, breeding and management of poultry in Canada has increased the yearly egg output per bird considerably. Also, there has been improvement in quality and an increase in size of eggs produced. As a result, the proportion of lower grades, that is, B and C, has been reduced and the higher grades increased. (Table 10.)

Seasonal Variations in Prices and Marketing of Eggs

Extreme seasonal fluctuations in production and price, probably greater than for any other farm product, have characterized the egg

TABLE 8. EGGS: SUPPLY AND DISPOSITION, CANADA, 1949 TO 1958

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
					(thousand dozen)					
Stocks at January 1	8,370	4,800	6,630	5,310	5,670	5,250	10,530	6,240	7,620	13,200
Production	307,073	293,727	291,234	342,527	355,184	385,819	386,011	404,311	446,476	449,819
Imports	250	897	4,674	1,550	1,560	2,187	2,086	4,118	1,607	2,434
Total Supply	315,693	299,424	302,538	349,387	362,414	393,256	398,627	414,669	455,703	465,453
Exports	42,564	14,792	7,103	13,420	7,718	7,274	4,040	3,939	9,628	19,386
Stocks at December 31	4,800	6,630	5,310	5,670	5,250	10,530	6,240	7,620	13,200	7,890
Used for Hatching	10,158	7,988	10,462	9,626	9,871	10,394	11,039	12,377	11,777	14,773
Domestic Disappearance	258,171	270,014	279,663	320,671	339,575	365,058	377,308	390,733	421,098	423,404
					(dozen)					
Per Capita Consumption	19.3	19.7	20.0	22.2	22.9	23.9	24.0	24.3	25.4	24.8

Source: D.B.S., Production of Poultry and Eggs, Annual.

TABLE 9. EGG PRODUCTION AND EGG MARKETINGS THROUGH REGISTERED EGG GRADING STATIONS, CANADA, 1949 TO 1958

Year	Egg Production	Eggs Marketed through Registered Grading Stations	Marketings as Per Cent of Production
	(thousand dozen)		(%)
1949	307,073	166,996	54.4
1950	293,727	150,767	51.3
1951	291,234	141,677	48.6
1952	342,527	163,727	47.8
1953	355,184	156,945	44.2
1954	385,819	176,762	45.8
1955	386,011	169,411	43.9
1956	404,311	183,831	45.5
1957	446,476	203,334	45.5
1958	449,819	202,058	44.9

Source: D.B.S., Production of Poultry and Eggs, 1958, and Department of Agriculture, Poultry Products Market Review, 1958.

TABLE 10. EGGS: PER CENT DISTRIBUTION BY GRADE, CANADA, 1949 TO 1958

Year	A Extra Large	A Large	A Medium	A Small	A Peewee	B Grade	C Grade	Cracks
1949	-	56.3	16.7	8.5	-	13.0	5.5	-
1950	-	58.6	16.6	7.9	-	11.7	5.2	-
1951	-	59.3	20.8	6.9	-	8.6	4.4	-
1952	-	58.2	21.4	5.2	-	10.5	4.7	-
1953	4.0	54.2	20.9	5.2	0.4	10.7	2.7	1.9
1954	5.7	54.2	21.7	5.3	0.4	8.3	2.0	2.4
1955	7.7	52.5	20.5	5.0	0.4	9.2	1.9	2.8
1956	8.6	49.9	21.6	5.5	0.5	9.0	1.9	3.0
1957	8.6	49.4	21.6	5.3	0.4	9.6	1.9	3.2
1958	9.0	49.2	21.5	5.5	0.5	9.2	1.8	3.3

Source: Poultry Products Market Review, Department of Agriculture, Ottawa, Annual.

industry. The seasonal movements in egg prices are related to an irregular flow of products to market during the year. Generally, in the first six months of the year, egg marketings are heavy and in the second half of the year, marketings are relatively light. However, this seasonal pattern is not static and it has changed considerably over the years.

From Table 11 one can see how the seasonal variations in the egg marketing pattern and prices have changed in recent years. In the period 1943-47, average marketings reached a seasonal high in April and a low in October. April marketings were 55% larger and October marketings 47% smaller than the average annual marketings. In the five-year period 1949-53, the range of seasonal variation decreased to about a half of the previous five-year period 1943-47. In the third five-year period 1954-58, seasonal variation in marketings decreased to about one-third of the first period 1943-47. In this third period the seasonal high was in January with marketings 16% above average, and a low in August with 14% below average. Seasonal price variations have also declined with the changes in marketing pattern, but the seasonal price variation has not declined to the same extent as that of marketings. More detailed analysis of prices for different grades shows that the smallest spread among grades occurs during the months of above average marketings, and the largest spread occurs in the early autumn when marketing of higher grades of eggs is at its lowest level.[1]

The variations in the seasonal marketing pattern have not been the same in all areas of the country. British Columbia has the smallest seasonal variation of egg marketings followed by the Maritimes and central Canada. The Prairie Provinces still show large variations in their seasonal egg marketing pattern. Especially in Saskatchewan,[2] almost half of the eggs produced during a year are put on a market during a four-month period - March to June. This is brought about by small flock units and severe winter conditions.

The levelling-out of seasonal variations in Canadian egg marketings has had a direct effect on the seasonal variation of prices of A-Large eggs and on the customary practices in the storage of shell eggs. The reduction in the seasonal variation of marketings was accompanied by a decrease in the storage of shell eggs. As more eggs became available in periods formerly characterized by seasonal light marketings, fewer storage eggs were required to supplement fresh supplies. In addition, less fluctuation in marketings and prices throughout the year

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1 In a publication, Seasonal Variations in the Prices and Marketing of Livestock and Poultry Products 1947-1957, Professor R.G. Marshall of the Department of Agricultural Economics, Ontario Agricultural College, Guelph, Ontario, states that the largest spread in prices is approximately in October, when A-Large are about 18% over A-Medium prices, and A-Small are discounted to over 30% below. The smallest spread occurs throughout the late winter and spring months when A-Large are only 2%-3% above and A-Small 8%-9% below A-Medium prices.

2 In 1955 Saskatchewan marketed more than 7½ million dozen eggs during the period of low prices, and less than 3 million dozen during the period of high prices.

TABLE 11. INDEXES OF SEASONAL PATTERN OF EGG MARKETINGS AND EGG PRICES TO PRODUCERS, CANADA, 1943-47, 1949-53 AND 1954-58

(Annual Average = 100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Egg Marketings												
1943-47	97	112	142	155	140	133	87	71	72	53	60	78
1949-53	121	104	115	124	125	98	81	74	76	81	91	111
1954-58	116	96	104	108	113	98	91	86	88	93	97	109
Egg Prices												
1943-47	96	93	89	86	86	86	92	100	110	117	123	120
1949-53	85	84	87	86	87	92	108	116	119	122	115	100
1954-58	91	89	92	91	91	93	107	112	114	114	108	99

decreases the profitability of an egg storage program. Table 12 shows seasonal patterns of egg stocks in storage in Canada in two periods, 1949-53 and 1954-58.

TABLE 12. INDEX OF SEASONAL PATTERN OF EGG STOCKS IN STORAGE, CANADA, 1949-53 AND 1954-58

(Annual Average = 100)

Month	1949-53	1954-58
January	5	29
February	30	81
March	70	107
April	108	115
May	167	140
June	212	174
July	214	179
August	180	135
September	134	105
October	65	72
November	15	39
December	3	26

Source: Adapted from D.B.S., Stocks of Food Commodities in Cold Storage and Other Warehouses, Ottawa, Annual.

The smoothing out of the marketing pattern has been made possible through the improvement during the past 10 years in feeding, breeding and management of poultry in Canada. This trend towards year-round spread production of eggs is continuing. Also, the policy of the Agricultural Stabilization Board in regard to the support of shell egg minimum prices has had a stabilizing effect on all levels of egg prices, and particularly on the minimum prices to producers.

Regional Characteristics of the Egg Industry

The production of eggs for Canada and by provinces is shown in Table 13. The biggest egg producing province in the country is Ontario. Over the decade 1949-58, it has accounted for 40.5% of the total production. Next to Ontario is Quebec, with 15.8% of the total production. In terms of regions, central Canada is the main egg producing area, with 56.3% of the total; the Prairie Provinces are second, with 28.4% of the total; the Maritimes follow with 7.8%; and British Columbia accounted for 7.6%. In terms of increases in production during the decade, Nova Scotia recorded a 92% increase. Other provinces also showed substantial increases - Ontario, 65%; British Columbia, 56%; and Alberta, 55%.

TABLE 13. TOTAL EGG PRODUCTION IN CANADA AND PROVINCES, AS PER CENT OF CANADA TOTAL, 1949 TO 1958

Year	CANADA	Maritime Provinces	Quebec	Ontario	Prairie Provinces	British Columbia
	(millions of dozens)			(per cent)		
1949	307.1	7.2	17.8	37.8	29.8	7.4
1950	293.7	7.3	17.1	40.8	28.0	6.8
1951	291.2	7.9	16.8	39.4	27.7	8.2
1952	342.5	7.7	16.1	40.7	27.7	7.8
1953	355.2	8.1	15.5	40.9	28.2	7.3
1954	385.8	8.3	16.4	40.7	27.1	7.4
1955	386.0	8.1	15.7	40.2	28.8	7.1
1956	404.3	8.4	14.7	40.2	29.0	7.7
1957	446.5	7.3	14.3	41.5	28.9	8.0
1958	449.8	7.2	13.2	42.6	29.1	7.9
Average 1949-58		7.8	15.8	40.5	28.4	7.6

Source: D.B.S., Production of Poultry and Eggs, Annual.

The Marketing of Eggs

(a) Arrangement and Assembly

The following are the methods most commonly used for delivery of eggs to grading stations: (1) direct delivery by the producers; (2) shipment by rail; (3) picking up by the grading stations; and (4) mixed, that is, delivery to a store by the producers and then, once a truckload is assembled, the egg grading station picks it up.

(b) Grading and Inspection

There are seven grades under which eggs are sold. Grade standards for shell eggs are established under federal legislation, which also requires that all eggs entering into interprovincial, export or import trade be graded.

All eggs passing through commercial channels are purchased from producers and sold to consumers on a graded basis. The same grade carries through from the producer to the consumer, unless there is some loss of quality in the marketing process.

The grading legislation provides that eggs may be graded either by a poultry producer (grading his own eggs), or in a registered egg grading station. The grading station must have approved grading equipment, approved graders and proper facilities for handling eggs, including refrigeration. The registered egg grading stations are privately operated, but are subject in their operation to the approval and supervision of the Federal Department of Agriculture.

In grading eggs, consideration is given to the three following factors: (1) interior quality, as determined by candling; (2) weight; (3) shell, as determined by the soundness and cleanliness of the shell.

Approximately 45% of the eggs produced in Canada go through the registered grading stations. Due to the concentration of the heavy volume of egg production in more restricted areas, the number of stations has been slowly declining during the past decade. Of the 55% of eggs that do not go through registered grading stations, a large number are graded directly for retail outlets by producers who have contracts with the retail outlets, or are sold directly by the producers to consumers.

(c) Sales to Processors, Wholesalers, Jobbers and Retail Stores

Eggs used for processing are usually packed in 30-dozen cases and used directly from cases when breaking for further processing. Wholesale firms and jobbers often buy eggs by whole carload lots in 30-dozen cases and then repack them in one-dozen cartons for the retail trade.

Some large chain stores have their own grading stations and a selected number of producers who supply eggs.

Small retail stores are serviced by individual producers, egg grading stations and by wholesalers or jobbers. Also, wholesalers and jobbers sell eggs to the processing plants, restaurants, hospitals, boarding houses and bakeries. There is a good deal of trade between wholesalers.

With regard to wholesaling, it is necessary to mention that this function in egg marketing, particularly in Ontario, is becoming much less important in the marketing system because the chain stores enter into contracts directly with the producers.

Measurement of the Egg Price Spread

In this study measurements of the price spread for Grade A-Large eggs are made for: (1) Canada as a whole; (2) four regions (Maritimes, Central, Prairies, British Columbia); and (3) Montreal.

(a) Price Spread for Eggs, A-Large, Canada, 1949-58

Table 14 shows producer prices and wholesale and retail equivalent values for Grade A-Large eggs marketed in Canada. There has been a downward trend at all levels of egg prices but this trend has been much more pronounced at the producer level. Between the years 1949 and 1958, retail and wholesale prices dropped by about 8% and the producer's price went down by about 19%, and that caused a decline in farmer's share from 81.5% in 1949 to 70.9% in 1958. The farm-retail spread increased from 11.1¢ per dozen in 1949 to 16.2¢ per dozen in 1958, with the increase taking place in the farm-wholesale component.

TABLE 14. SUMMARY OF CALCULATIONS OF FARM-WHOLESALE-RETAIL SPREADS ON EGGS A-LARGE, CANADA, 1949 TO 1958

Calendar Year	Retail Price (¢/doz.)	Retail Equivalent Value of 1 Dozen at Farm (¢)	Wholesale Equivalent Value of 1 Dozen at Farm[a] (¢)	Farm Price (¢/doz.)	Farm-Retail Spread (¢)	Farm-Wholesale Spread (¢)	Farmer's Share of Retail Value (%)
1949	61.8	60.0	53.5	48.9	11.1	4.6	81.5
1950	56.9	55.2	48.9	43.1	12.1	5.8	78.0
1951	70.7	68.6	62.2	54.9	13.7	7.3	80.0
1952	59.0	57.3	50.7	42.9	14.4	7.8	74.9
1953	68.1	66.1	60.1	50.8	15.3	9.3	76.8
1954	55.7	54.1	48.5	39.5	14.6	9.0	73.1
1955	62.2	60.4	54.3	45.5	14.9	8.8	75.4
1956	62.1	60.3	54.0	45.1	15.2	8.9	74.7
1957	56.3	54.7	48.1	38.3	16.4	9.8	70.0
1958	57.3	55.6	49.3	39.4	16.2	9.9	70.9

a Based on a producer-retail yield of 97.1%.

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This study shows the farmer's share for Grade A-Large eggs only and, therefore, two remarks should be made in this connection. First, the farmer's share for all eggs sold will be lower, as A-Large eggs represent roughly 50% of all eggs marketed and the rest are lower grade eggs for which the farm price is lower. Second, farmers sell less than a half of their egg production through registered egg grading stations and the remainder goes directly from the farmer to the ultimate consumer or the outlet stores, and it is likely that the farmer's share for that part would be higher.

(b) Regional Price Spreads

Table 15 shows regional prices, farmer's shares, and farm-wholesale and wholesale-retail spreads for Grade A-Large eggs. Generally, retail prices are highest in the Maritimes and lowest in the Prairies. Producer prices are lowest in the Prairies and highest in central Canada and the Maritimes, followed closely by British Columbia.

Wholesale margins are lowest in the central provinces, intermediate in the Prairies and British Columbia, and highest in the Maritimes. Total farm-retail margins, however, do not differ much regionally, except for the Maritimes where they are substantially higher, especially since 1953. The producers in the central provinces get the highest share of the retail price for their eggs, whereas the producers in the Prairies get the lowest.

(c) Price Spread for Montreal City

Table 16 shows monthly egg prices for Montreal for the period 1949 to 1958. Although this table presents the variation in prices for eggs Grade A-Large for the Montreal area only, it also could be taken as representative for a region or for the country as a whole. It is evident from this table that the trend towards seasonal levelling-out of all three sets of prices is continuing.

Comparison with United States

In the production and marketing of eggs, Canada and the United States follow the same trend. In both these countries specialization in production is now firmly established and increasing, although a large proportion of eggs is still produced on farms, which maintain small flocks on a non-commercial or semi-commercial basis. In the marketing of eggs, the most important development is the move towards more direct marketing and the resultant by-passing of oldline wholesalers.

Because Canadian and United States calculations of the farmer's share do not refer to the same quality and grade of eggs, direct comparison of the farmer's share on eggs cannot be made. In Canada, the farmer's share is calculated on Grade A-Large eggs, and in the United States, on all grades and sizes. In view of this, the Canadian farmer's share is higher than the United States. However, there is one common characteristic of the farmer's share in both countries, that in the period 1949-58, it shows a well-pronounced downward trend.

TABLE 15. PRICE SPREADS FOR EGGS, GRADE A-LARGE, FOUR REGIONS OF CANADA, 1949 TO 1958

Year	MARITIMES		CENTRAL PROVINCES		PRAIRIES		BRITISH COLUMBIA[a]	
	Farm Price	Retail Equivalent Value	Farm Price	Retail Equivalent Value	Farm Price	Retail Equivalent Value	Farm Price	Retail Equivalent Value
	(cents per dozen)							
1949	51.4	63.9	50.9	61.2	42.9	55.0	47.0	58.7
1950	45.6	57.9	55.1	55.8	38.0	50.8	45.2	57.7
1951	55.7	70.1	57.1	70.7	48.2	62.0	54.4	68.1
1952	46.0	61.3	44.6	58.7	36.6	51.0	42.4	56.6
1953	51.5	69.3	53.1	68.0	43.6	58.9	50.8	64.3
1954	41.4	57.9	40.7	55.0	34.8	49.4	40.4	54.0
1955	46.5	64.4	47.4	61.9	38.9	53.4	46.2	60.0
1956	46.6	64.0	46.8	61.2	38.2	53.9	47.7	63.3
1957	40.6	58.0	39.8	55.9	33.8	49.4	36.8	53.2
1958	41.3	59.1	41.9	57.3	32.7	48.5	37.5	53.9

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TABLE 15. PRICE SPREADS FOR EGGS, GRADE A-LARGE, FOUR REGIONS OF CANADA, 1949 TO 1958 (Cont'd.)

Year	MARITIMES	CENTRAL PROVINCES	PRAIRIES	BRITISH COLUMBIA[a]
	Farmer's Share as Per Cent of Retail Equivalent Value (per cent)			
1949	80.4	83.2	78.0	80.0
1950	78.8	79.0	74.8	78.3
1951	79.5	80.8	77.7	79.9
1952	75.0	76.0	71.8	74.9
1953	74.3	78.1	74.0	79.0
1954	71.5	74.0	70.4	74.8
1955	72.2	76.6	72.8	77.0
1956	72.8	76.5	70.9	75.4
1957	70.0	71.2	68.4	69.2
1958	69.9	73.1	67.4	69.6

TABLE 15. PRICE SPREADS FOR EGGS, GRADE A-LARGE, FOUR REGIONS OF CANADA, 1949 TO 1958 (Cont'd.)

Year	MARITIMES	CENTRAL PROVINCES	PRAIRIES	BRITISH COLUMBIA[a]
	Total Farm-Retail Spread (cents per dozen)			
1949	12.5	10.3	12.1	11.7
1950	12.3	11.7	12.8	12.5
1951	14.4	13.6	13.8	13.7
1952	15.3	14.1	14.4	14.2
1953	17.8	14.9	15.3	13.5
1954	16.5	14.3	14.6	13.6
1955	17.9	14.5	14.5	13.8
1956	17.4	14.4	15.7	15.6
1957	17.4	16.1	15.6	16.4
1958	17.8	15.4	15.8	16.4

TABLE 15. PRICE SPREADS FOR EGGS, GRADE A-LARGE, FOUR REGIONS OF CANADA, 1949 TO 1958 (Cont'd.)

Year	MARITIMES	CENTRAL PROVINCES	PRAIRIES	BRITISH COLUMBIA[a]
	Farm-Wholesale Spread (cents per dozen)			
1949	6.6	3.3	6.3	5.6
1950	7.1	5.2	7.2	6.6
1951	8.9	6.6	8.2	7.0
1952	9.4	7.1	8.9	7.6
1953	13.2	7.9	11.2	9.2
1954	11.7	7.9	11.1	9.1
1955	13.3	7.5	10.4	9.0
1956	12.3	7.5	10.6	10.7
1957	12.4	8.6	10.4	12.6
1958	13.0	8.5	11.0	12.5

TABLE 15. PRICE SPREADS FOR EGGS, GRADE A-LARGE, FOUR REGIONS OF CANADA, 1949 TO 1958 (Cont'd.)

Year	MARITIMES	CENTRAL PROVINCES	PRAIRIES	BRITISH COLUMBIA[a]
	Wholesale-Retail Spread (cents per dozen)			
1949	5.9	7.0	5.8	6.1
1950	5.2	6.5	5.6	5.9
1951	5.5	7.0	5.6	6.7
1952	5.9	7.0	5.5	6.6
1953	4.6	7.0	4.1	4.3
1954	4.8	6.4	3.5	4.5
1955	4.6	7.0	4.1	4.8
1956	5.1	6.9	5.1	4.9
1957	5.0	7.5	5.2	3.8
1958	4.8	6.9	4.8	3.9

a Figures are for Vancouver market only.

TABLE 16. EGG PRICES AT MONTREAL, 1949 TO 1958[a]

Average prices, by months, 1949 to 1958, for Grade A-Large eggs, as received by producers, as paid by retailers and as paid by consumers.

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
	(cents per dozen)									
Farm Price										
Jan.	49.0	32.2	40.0	37.9	40.7	39.8	33.8	39.5	33.6	35.1
Feb.	44.2	38.4	47.9	37.2	46.1	43.0	38.0	40.2	35.2	36.2
Mar.	45.2	41.6	50.9	36.0	52.0	38.2	41.4	45.2	34.9	46.1
Apr.	46.8	39.4	54.0	35.4	52.0	37.6	41.0	46.6	35.2	38.8
May	47.2	36.7	57.9	34.9	52.5	37.8	39.2	45.8	35.4	39.8
June	49.5	41.6	63.6	45.2	61.5	42.1	48.8	53.2	37.0	44.4
July	56.0	47.0	69.5	56.9	67.0	48.3	55.6	56.6	50.1	45.5
Aug.	64.0	50.1	69.9	55.1	67.1	47.5	62.8	57.8	48.1	50.0
Sept.	69.0	56.0	70.5	57.9	68.8	52.5	62.1	56.8	50.6	52.5
Oct.	65.0	59.1	70.0	64.6	62.5	47.0	60.8	57.2	54.0	48.8
Nov.	57.0	55.0	61.8	52.6	47.1	40.4	55.5	40.4	44.2	43.0
Dec.	47.5	50.0	45.2	41.9	38.8	34.9	49.0	36.1	39.5	39.4
Wholesale Equivalent Value										
Jan.	52.4	34.1	46.8	45.3	47.5	48.2	41.9	47.2	41.8	43.7
Feb.	45.2	40.7	53.9	44.2	53.0	50.7	45.7	48.4	44.1	44.7
Mar.	46.6	43.0	57.4	42.6	60.1	46.5	49.5	53.6	43.5	53.9
Apr.	47.6	41.0	59.2	41.9	59.4	45.5	48.8	53.6	43.7	47.4
May	48.1	41.1	64.0	41.9	59.9	45.5	47.1	54.2	43.8	47.7
June	50.0	47.6	68.4	51.9	68.2	49.7	56.1	61.3	45.2	52.2
July	57.3	52.9	75.2	62.7	75.1	56.8	63.8	64.2	58.7	53.6
Aug.	66.0	54.2	75.5	61.5	75.3	55.2	70.8	65.6	56.6	57.6
Sept.	70.4	61.2	76.9	64.0	75.8	60.8	69.7	65.5	58.6	61.2
Oct.	64.1	65.8	75.5	70.5	71.2	55.1	68.7	65.3	62.5	57.3
Nov.	58.3	61.6	68.4	58.9	56.1	48.7	63.9	48.9	52.8	51.6
Dec.	50.0	57.6	52.4	48.9	47.6	42.9	57.6	45.1	48.0	48.4

TABLE 16. EGG PRICES AT MONTREAL, 1949 TO 1958[a] (Cont'd.)

Average prices, by months, 1949 to 1958, for Grade A-Large eggs, as received by producers, as paid by retailers and as paid by consumers.

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
					(cents per dozen)					
Retail Equivalent Value										
Jan.	38.7	55.2	50.6	55.5	53.9	48.8	53.2	51.0	50.3	51.8
Feb.	45.2	60.3	50.5	59.6	58.4	51.9	53.8	49.0	49.7	51.2
Mar.	48.3	65.8	50.1	65.8	53.6	55.3	59.6	49.0	59.7	61.5
Apr.	47.4	65.9	49.3	66.2	52.1	55.5	60.4	48.7	53.6	55.2
May	46.6	70.9	48.6	66.2	52.0	54.2	59.8	48.4	53.3	54.9
June	51.4	74.4	59.2	73.2	55.2	62.1	67.3	50.4	58.3	60.0
July	58.6	82.6	70.8	81.2	61.9	70.8	71.4	64.3	60.7	62.5
Aug.	61.0	80.7	69.9	81.0	61.7	76.9	73.3	62.8	64.6	66.5
Sept.	64.3	85.4	71.0	83.0	66.1	75.4	72.3	65.8	68.9	71.0
Oct.	72.8	86.2	77.7	80.5	61.6	74.6	73.0	68.7	65.3	67.2
Nov.	68.4	76.7	67.3	62.9	55.5	69.1	56.3	59.9	60.0	61.8
Dec.	64.3	63.6	57.5	55.5	48.9	62.8	51.0	55.2	54.9	56.5

a Adapted from Poultry Products Market Report, Canada Department of Agriculture, Weekly.

FLOUR AND BREAD

1. A Brief Description of the Marketing and Distribution System for Wheat to Wheat Bread

All commercial wheat grown in western Canada is marketed through the Canadian Wheat Board which sets an initial price to the farmer and adjusts its selling price more or less according to world market conditions. The farmer delivers his wheat to the country elevator which received it on account of the Wheat Board. After weighing and determining the grade and the dockage for impurities, the elevator agent issues a cheque to the farmer based on the initial Wheat Board price. The initial price is based on the Lakehead and is subject to deductions for freight and elevator handling charges between the country shipping point and the Lakehead. These handling charges cover weighing, storage and outloading from the country elevator into boxcars.

The wheat then moves in carlots, mostly eastward through the main inspection point at Winnipeg, where the grade is confirmed or established by sampling. From Winnipeg, the wheat then moves in carlots to elevators at the Lakehead where it is handled in bulk by a mechanical unloading and elevating operation. In the process, the wheat is automatically sampled again to check the grade and dockage. The "screenings" which are removed in a cleaning process are usually saleable for livestock feed. After storage, the wheat is shipped by lake vessel during the navigation season or otherwise by boxcars to an eastern milling company's storage or to private or government storage.

Forty-one of the 73 flour mills in Canada are located in Ontario, 28 in the Prairie Provinces, and four in Quebec. The flour mills buy wheat by grades from the Wheat Board in proportion to the mixtures to be used in the milling process. Flour milling is a highly-mechanized, complex blending operation. Flours of varying baking quality may be milled from a particular lot of wheat. The selling prices of the different grades of flour vary according to the quality. Certain non-wheat ingredients are added to the flour such as vitamins and chemical blending and maturing agents.

There are valuable by-products from the milling process called "mill feeds". Variations in prices of the mill feeds have significant influence on the profitability of the milling operation. The mill feeds may be sold directly by the flour mills to farmers as feed for livestock, they may be distributed through feed dealers, or they may be used as constituents in further processing into prepared livestock and animal feeds.

The baking industry consists of a number of chain bakeries and independent bakeries ranging down to small local establishments. Larger bakeries in eastern Canada buy their flour from the milling companies on a current requirement basis. Sometimes the flour is deliv-

ered by the milling company to large bakeries in bulk in special railway cars but it is usually distributed by truck. The smaller independents may obtain their supplies of flour from wholesalers.

After the flour reaches the bakery, the processing and distributing operations are many and varied. Initially, the flour may have to be stored for a while, then the ingredients have to be mixed more or less mechanically, the bread has to be baked in the ovens and then cooled, then the bread usually is sliced, and then the loaves are wrapped and delivered. Wages and salaries, and ingredients are the largest items among baking costs, and packaging and delivery costs also are important items. Considerable selling and promotional expenses are incurred by bakeries in bread distribution, and the loss from bread going stale is significant. Some of the stale bread is salvaged as feed for livestock.

The bread moves from the bakeries directly to chain stores by bulk truck shipments, and is delivered in smaller lots to independent grocery stores,restaurants and other retail establishments. Some of the larger bakeries operate depots in urban centres where bulk is broken and from which these smaller establishments are serviced. Bread-selling routes are served by the delivery truck system with drivers on a salary-commission and handling a range of bread and cake products. The delivery man is the bakery firm's main link with the customer. In the case of wholesale sales to retail stores, the delivery man not only sells but arranges for display space and gives advice on other selling details. The proportion of bakery sales made at wholesale has been increasing.

2. Milling of "Manitoba" Hard Spring Wheat Into Flour

A kernel of wheat is made up of three main parts: (1) the outer parts which become the animal feed called "bran"; (2) the body of the kernel, called the "endosperm"; and (3) the germ, which normally produces the new plant.

The endosperm is the part of the kernel that becomes flour after the separation of the bran and the germ. This process is known as extraction and the rate of extraction is the quantity of flour that may be extracted from a given quantity of wheat. In Canada, the extraction rate varies from 72% to 74%. A hundred pounds of wheat will produce 72 to 74 pounds of flour plus 26 to 28 pounds of millfeeds, i.e., bran, shorts and middlings. The higher the extraction rate, the more bran, shorts and middlings that are included in the flour. Bran, shorts and middlings are higher in protein than the endosperm that produces the flour. Therefore, the higher the extraction rate the higher the protein content.

The early method of milling wheat into flour was simply to crush the wheat and remove the bran from the flour by "bolting" or sifting. Flour obtained from this process was usually of one grade. The introduction of the roller process and other refinements resulted in the wheat being reduced more gradually and made possible not only a more

complete separation of bran, shorts and middlings, but also a large number of flour separations called streams.

There are generally four main "streams" which may be blended together in a large number of combination to produce different grades of flour. Stream 1 is the best 55% of the total flour, being freest from bran and germ, lowest in ash and whitest in colour. Streams 2 and 3 are the next best 30% and 12%, respectively, and Stream 4 the poorest 3%. These percentages refer to division of total flour, not the extraction rate.

These four main streams are used to produce the most common types of flour sold by Canadian flour mills:

Commercial Grades of Flour

	Streams	% of total flour
First Patent	1	Best 55%
Bakers Patent	1 + 2	Best 85%
Export Patent	1 + 2 + 3	Best 97%
Straight Run	1 + 2 + 3 + 4	Best 100%
Fancy Clear	2 + 3 + 4	Poorest 45%
First Clear	3	Poorest 15% less 3% low grade
Second Clear	3 + 4	Poorest 15%

In general the less the quantity of first patent flour, etc. that is taken off, the higher the quality of that which is left.

It may be seen from this brief description of the milling process that flour of different baking quality may be milled from a particular lot of wheat. The selling prices of the different grades vary according to quality with the clear selling at a much lower price than the first patents. First patent flour, with an extraction rate of 72%, contains 55% of the flour and, therefore, represents only 40% of the wheat milled. This partly explains the higher cost.

Various non-wheat ingredients are added to the flour such as: (1) enrichment by adding vitamins and other nutrients; (2) chemical improvers such as potassium bromate to hasten dough development when flour is made into dough; (3) chemical blending agents, such as benzoyl peroxide, that destroys the natural yellow pigment and produces a whiter product; and (4) maturing agents such as chlorine dioxide that cuts the natural time of maturing from several months to a few hours.

3. Hard Spring Wheat Flours, Used in Making Bread

The qualities of a flour used for bread-making depend on a number of factors such as the grade of the flour and the quantity and quality of the gluten (protein) in the wheat from which it is milled. The quantity and quality of gluten in wheat is partly an inherited characteristic and is affected by soil and climatic conditions during

the growing and harvesting season. Canadian hard spring wheats have an international reputation for quality with good gluten content. Soil and climatic conditions, such as frost before the kernels have filled out or wet weather during harvest, lower both the quantity and quality of the gluten so important in making good bread. Climatic factors, therefore, may have an important effect on the milling of flour and the quantities exported to other countries.

Different flours require different treatment in baking for best results. The miller, therefore, tries to maintain the quality by the control of the mill streams of the different flour grades.

4. Production of Wheat Flour and Mill Feeds

Table 1 shows the production of hard spring wheat flour, total wheat flour and the hard spring wheat flour as a per cent of the total wheat flour production. The table indicates that from 78.9% to 85.4% of the total wheat flour is produced from "Manitoba" hard spring wheat, grown largely in the three Prairie Provinces. The great importance to the milling industry of top quality wheat is apparent.

TABLE 1. "MANITOBA" HARD SPRING WHEAT FLOUR COMPARED TO TOTAL FLOUR PRODUCTION, CANADA, 1949-58

Year	Hard Spring Wheat Flour[a]	Total Flour Production	Hard Spring Wheat Flour as a Per Cent of Total Flour Production
		(thousand cwt.)	(%)
1949	32,706	39,045	83.8
1950	32,482	41,182	78.9
1951	38,337	45,029	85.1
1952	39,679	47,244	84.0
1953	35,425	43,602	81.2
1954	35,616	41,716	85.4
1955	33,734	39,629	85.1
1956	33,382	39,987	83.5
1957	31,050	37,640	82.5
1958	33,795	41,193	82.0

a Total of Flour Patents, numbers 1, 2, 3 and Whole Wheat and Graham Flour.

Source: Dominion Bureau of Statistics, Grain Milling Statistics, Ottawa, Monthly.

The production of wheat flour, the quantity exported and the quantity available for domestic consumption are summarized in Table 2. Wheat flour production increased from 1949 to 1952, decreased from 1953 to 1957, and increased during 1958. Exports of wheat flour followed the same trend as production. The leading market for Canadian wheat flour is the United Kingdom. Other important markets are the Philippines, Venezuela, Ceylon, the West Indies, Belgian Congo, Japan and United States.

TABLE 2. PRODUCTION OF WHEAT FLOUR, QUANTITY EXPORTED AND QUANTITY AVAILABLE FOR DOMESTIC CONSUMPTION, CANADA, 1949-58

Year	Production	Exports	Available for Domestic Consumption[a]
		(thousand cwt.)	
1949	39,045	18,958	20,087
1950	41,182	19,764	21,418
1951	45,029	23,697	21,332
1952	47,244	25,694	21,550
1953	43,602	22,002	21,600
1954	41,716	19,342	22,374
1955	39,629	17,328	22,301
1956	39,987	16,950	23,037
1957	37,640	14,665	22,975
1958	41,193	17,326	23,867

a Flour available for domestic consumption is obtained by deducting exports from production.

Source: Dominion Bureau of Statistics, Grain Milling Statistics, Ottawa, Monthly.

During the last few years, Canadian wheat flour exports have been affected by huge wheat surpluses built up in the United States which were being marketed on a "give-away program". This disposal of grain and flour is heavily subsidized and is sold on long term, much of it for payment in local currencies. A large volume of this surplus grain and flour is also bartered and finds its way into traditional Canadian markets. Other factors affecting Canadian exports of wheat flour should be mentioned, such as re-establishment of the flour milling industry in war devastated countries and new flour mills in others. A lowering of quality (protein content) for some of the years 1949 to 1958 has also had its effect in reducing exports of flour.

With declining exports of wheat flour, great pressures are exerted on the domestic market. Increasing population should, in time, make the industry less dependent on the export markets. Table 2 showed

that the quantity of wheat flour available for domestic consumption increased from 1949 to 1958 with decreasing exports, especially between 1952 and 1957.

In Table 3 a comparison is made of the production of the main grades of hard bread-wheat flour and the total hard bread-wheat flour. Patent No. 1 is a finer flour and is largely sold in the retail food stores as a family or "all purpose" flour. The flour sold to bakeries is mainly No. 2 Patent. A very large proportion of No. 3 Patent flour is exported.

TABLE 3. PRODUCTION OF HARD WHEAT BREAD FLOUR, BY GRADES, CANADA, 1949-1958

Year	Patent No. 1	Patent No. 2	Patent No. 3	Whole Wheat and Graham Flour	Total Hard Wheat Flour
			(thousand cwt.)		
1949	7,026	9,691	15,498	491	32,706
1950	7,099	10,543	14,328	512	32,482
1951	7,319	11,319	19,097	602	38,337
1952	7,385	10,541	21,163	590	39,679
1953	7,392	10,188	17,266	579	35,425
1954	7,654	11,844	15,533	585	35,616
1955	7,314	11,763	14,116	541	33,734
1956	7,257	11,635	13,923	553	33,368
1957	6,961	10,902	12,675	512	31,050
1958	7,531	12,716	13,078	470	33,795
			(Per cent of Total Hard Wheat Flour)		
1949	21.5	29.6	47.4	1.5	100.0
1950	21.8	32.5	44.1	1.6	100.0
1951	19.1	29.5	49.8	1.6	100.0
1952	18.6	26.6	53.3	1.5	100.0
1953	20.9	28.8	48.7	1.6	100.0
1954	21.5	33.3	43.6	1.6	100.0
1955	21.7	34.9	41.8	1.6	100.0
1956	21.7	34.9	41.7	1.7	100.0
1957	22.4	35.1	40.8	1.7	100.0
1958	22.3	37.6	38.7	1.4	100.0

Source: Dominion Bureau of Statistics, Grain Milling Statistics, Ottawa, monthly.

Table 4 shows the production of wheat flour and millfeeds, i.e., bran shorts and middlings. The millfeed products remaining after the extraction of flour from wheat are normally sold for livestock feed. Production of millfeeds, except for the years 1951 and 1952, ranged from .33 to .35 pounds per pound of flour produced.

TABLE 4. TOTAL PRODUCTION OF WHEAT FLOUR AND MILLFEEDS[a], CANADA, 1949-1958

Year	Wheat Flour	Millfeeds	Pounds of Millfeeds Per Pound of Flour
	(thousand cwt.)		
1949	39,045	13,525	.35
1950	41,182	14,511	.35
1951	45,029	16,914	.38
1952	47,244	17,040	.36
1953	43,602	14,740	.34
1954	41,716	13,950	.33
1955	39,629	13,855	.35
1956	39,987	13,909	.35
1957	37,640	12,680	.34
1958	41,193	13,900	.34

a Bran, shorts and middlings.

Source: Dominion Bureau of Statistics, Grain Milling Statistics, Ottawa, monthly.

5. Flour Mill Prices for Hard Wheat Flour

The average selling prices of flour, by grades, total hard wheat flour, and total wheat flour are given in Table 5. Prices for Patent No. 1 flour, generally used for "all purpose" flour, and to which price spreads presented later in this report are related, moved upwards in 1950 and 1951 and downwards after 1951. The price for Patent No. 2 flour, the flour largely used by bread bakeries, and to which price spreads presented further on in this study are also related, moved downward through the period after 1950. Wheat flour prices for all flours generally declined from 1949 to 1957. This reduction in selling prices took place even though an additional cost of "enrichment" began in 1953.

The miller's cost of all types of wheat, the selling price of millfeeds and of flour per barrel of flour sold, are shown in Table 6.

TABLE 5. AVERAGE SELLING PRICE OF FLOUR BY GRADES, AT THE FLOUR MILL, CANADA, 1949-1957

Year	Patent No.1	Patent No.2	Patent No.3	Whole Wheat[a] Flour	Total Hard[b] Wheat Flour	Total All Types Of Flour
			(dollars per barrel[c])			
1949	9.79	8.98	9.34	8.89	9.36	9.29
1950	9.88	9.13	9.19	9.05	9.31	9.22
1951	10.02	8.97	9.02	8.89	9.19	9.14
1952	9.77	8.72	8.80	8.71	8.96	8.92
1953	9.77	8.53	8.86	8.60	8.95	8.79
1954	9.39	8.49	8.39	8.28	8.65	8.54
1955	9.33	8.18	7.83	7.94	8.29	8.19
1956	8.65	8.17	8.19	8.05	8.29	8.22
1957	8.86	8.27	8.18	7.81	8.37	8.26

a Whole Wheat and Graham Flour.
b Total of Patents Nos. 1, 2, 3 and Whole Wheat and Graham Flour.
c A barrel of flour weighs 196 pounds.

Source: Dominion Bureau of Statistics, The Flour Milling Industry, Ottawa, annual.

TABLE 6. FLOUR MILLS' COST OF WHEAT, SELLING PRICE OF MILLFEEDS AND FLOUR, PER BARREL OF FLOUR SOLD CANADA, 1949-1957

Year	Cost of Wheat	Selling Price of Millfeeds	Selling Price of Flour
		(dollars per barrel of flour)	
1949	9.18	1.75	9.29
1950	9.13	1.89	9.22
1951	9.04	2.04	9.14
1952	8.89	2.06	8.92
1953	8.46	1.64	8.79
1954	8.02	1.47	8.54
1955	7.68	1.57	8.19
1956	7.77	1.53	8.22
1957	7.50	1.41	8.26

Source: Dominion Bureau of Statistics, The Flour Milling Industry, Ottawa, annual.

The price of wheat as well as the selling price of flour moved downward over the nine years. Millfeed sales offset the cost of milling flour and may thereby cushion the effects of falling flour prices. The selling price of millfeeds moved upwards for each of the years 1949 to 1952, but from 1953 moved downwards. It should be repeated that the market for millfeeds is for livestock feeding. The "cushioning" effect of millfeed sales will depend on competitive conditions in the feed industry.

6. The Effect of Unused Capacity on Flour Mill Production Costs

Unused capacity results in higher costs per barrel of flour produced than if mills are operating at near-capacity. A study by a Royal Commission on Price Spreads, published in 1937, showed that below-capacity production of flour existed in the milling industry following World War I. It was shown previously in this study that the production of flour, millfeeds, and the quantity exported in general, increased from 1949 to 1952, decreased from 1953 to 1957, and then increased during 1958. Quantities available for domestic consumption increased slightly, but prices of both flour and millfeeds decreased over the period. Table 7 illustrates the effect of unused capacity on some costs of the milling industry. Over the period, 1949 to 1957, flour production varied from 62% to 76% of capacity, averaging 70%. Capital, repairs and maintenance expenditures per barrel of flour varied considerably from year to year, but salaries and wages increased continuously after 1950, except for 1956. Increasing mechanization and automation and product differentiation may explain why there has not been more upward pressure on flour prices, particularly from increasing salary and wage costs. It would seem that if flour production is to move significantly towards capacity much depends on exports. As far as the domestic market goes, the increase in population is about offset by the decline in per capita consumption. In an effort to assure themselves of a domestic market for their flour, some larger flour mills have made a considerable investment in the bakery industry. This investment was referred to in an investigation conducted under the Combines Investigation Act[1] in 1931, and by Royal Commissions on Price Spreads and Prices in 1937 and 1948, and has existed over the period covered by this study.

7. Estimation of the Farm-Retail Spread on Wheat Flour

Basic data from the Canada Department of Agriculture were used in estimating the farm to retail price spread for flour.[2] The

1 Investigation Into An Alleged Combine in the Bread-Baking Industry in Canada, Ottawa, 1931.

2 "Price Spreads and Farmer's Share of the Consumers' Food Dollar", Economic Annalist, Canada Department of Agriculture, Ottawa, August, 1958, pp.93 and 94.

TABLE 7. EFFECT OF BELOW CAPACITY AND CAPACITY PRODUCTION ON COSTS, CANADA, 1949-1957

Year	Production	Capacity Production[a]	Capital Expenditures[b]		Repairs and Maintenance[b] Expenditures		Salaries and Wages	
			Production	Capacity Production	Production	Capacity Production	Production	Capacity Production
	(thousands bbls. of flour)		(cents per Barrel of Flour)					
1949	20,302	32,971	n.a.	n.a.	n.a.	n.a.	5.9	3.6
1950	20,577	33,100	n.a.	n.a.	n.a.	n.a.	5.8	3.6
1951	23,378	31,747	8.3	6.1	8.2	6.0	5.8	4.3
1952	23,493	31,952	9.4	6.9	7.9	5.8	6.2	4.6
1953	23,446	30,836	5.0	3.8	8.8	6.7	6.4	4.8
1954	21,099	30,416	12.1	8.4	7.9	5.5	7.3	5.1
1955	20,559	28,329	12.3	8.9	8.3	6.0	7.5	5.5
1956	20,541	28,420	16.3	11.8	7.9	5.7	7.3	5.3
1957	19,132	29,331	7.0	4.6	7.1	4.6	7.9	5.2

a Capacity production per day of 24 hours if calculated on a basis of 304 days to the year.

b Construction and machinery.

Source: Adapted from: Dominion Bureau of Statistics, The Flour Milling Industry, Ottawa, annual.

farm value of wheat was based on the domestic wheat price of one bushel of No. 2 Northern, in store Fort William-Port Arthur. The average of weekly prices for each year is used. By-product values and marketing costs from the country elevator to Lakehead storage, such as freight and handling charges and Wheat Board expenses, were deducted to derive the farm value. The retail price of flour is a weighted average price for "all purpose" white flour sold from chain and independent food stores. The milling and wholesale prices are for No. 1 Patent flour. The wholesale price is an average for Toronto and Montreal.

The calculations of price spreads and farmer's share are summarized in Table 8. Wheat and flour prices declined over the period at all levels except wholesale and retail. Retail prices increased each year except for 1955. Wholesale prices advanced to 1953 and declined thereafter, but remained above the 1949 level. The overall spread widened rapidly from 1949 to 1954, decreased slightly in 1955, and increased thereafter.

Marketing charges for wheat as far as the Lakehead increased up to 1953 and then declined to 1949 levels. By-product values increased to 1951 and then declined well below the 1949 figure.

The milling spread and the miller's share of the retail value increased over the decade as a whole. At least part of the widening of the miller's spread can be explained by the increased amount of consumer-size packaging performed. The retail spread increased also, and the wholesale spread more than doubled. Wholesalers do not handle much flour any more compared to chain stores who do their own wholesaling and so it is more meaningful to say that the combined wholesale-retail spread has widened substantially.

8. Production of Bread in the Bread-Baking Industry

Table 9 shows the quantity of hard wheat bread flour and soft wheat cake flour purchased by bakeries reporting to the Dominion Bureau of Statistics and their proportion of the quantity of wheat flour available for domestic consumption. The hard wheat bread flour purchased by the bread baking industry during the period 1949-57 ranged from 47.4% to 52.2% of the wheat flour available for domestic consumption; purchases of soft wheat cake flour ranged from 2.3% to 3.0%. The production of bread by the bread baking industry is shown in Table 10 which shows that production increased from 1949 to 1953, decreased slightly in 1954 and increased from 1955 to 1957, reaching the high point of production for the period in 1957.

TABLE 8. SUMMARY OF FARM-LAKEHEAD-MILL-WHOLESALE-RETAIL SPREADS ON WHEAT-INTO-FLOUR, CANADA, 1949-1958

Calendar Year	Retail[a] Price Flour	Retail Equivalent Value of 1 bu.Wheat	Toronto-Montreal[b] Wholesale Equivalent Value of 1 bu.Wheat	Milling[b] Equivalent Value of 1 bu.Wheat	Lakehead[c] Price No. 2 Northern	Farm[b] Price of Wheat	Farm Value[e] Of Wheat Less By-Products	Farm-[f] Retail Spread	Farmer's Share of Retail Value
	(¢/lb)	($)	($)	($)	($/bu.)	($/bu.)	($)	($)	(%)
1949	7.2	3.06	2.23	2.12	2.02	1.78	1.50	1.56	49.0
1950	7.3	3.10	2.41	2.14	1.97	1.71	1.41	1.69	45.5
1951	7.4	3.14	2.48	2.17	1.91	1.64	1.33	1.81	42.4
1952	7.4	3.14	2.41	2.12	1.80	1.53	1.23	1.91	39.2
1953	7.6	3.23	2.59	2.12	1.89	1.57	1.31	1.92	40.6
1954	7.7	3.27	2.51	2.04	1.71	1.40	1.15	2.12	35.2
1955	7.4	3.14	2.49	2.02	1.71	1.45	1.20	1.94	38.2
1956	7.6	3.23	2.47	1.88	1.70	1.45	1.21	2.02	37.5
1957	7.9	3.36	2.47	1.92	1.60	1.37	1.15	2.21	34.2
1958	8.0	3.40	2.50	n.a.	1.62	1.39	1.19	2.21	35.0

a Weighted average price for "all purpose" white flour.
b Based on 42.5 pounds of flour from one bushel of wheat.
c Basis in store Fort-William-Port Arthur, domestic sales price.
d Net Farm Value after deduction of freight and handling charges and operating expenses.
e This is farm price of wheat minus value of millfeeds, i.e., bran, shorts and middlings.
f This is the difference between Retail Equivalent Value of wheat and Farm Value of wheat.

TABLE 9. HARD AND SOFT WHEAT FLOURS PURCHASED BY THE BREAD AND OTHER BAKERY PRODUCTS INDUSTRY AND THE QUANTITY OF WHEAT FLOUR AVAILABLE FOR DOMESTIC CONSUMPTION, CANADA, 1949-1957

Year	Purchases of Hard Wheat Flour[a]	Purchases of Soft Wheat Flour[a]	Wheat Flour Available for Domestic Consumption[b]
		(Thousand hundredweights)	
1949	9,573	497	20,087
1950	10,149	500	21,418
1951	10,291	582	21,332
1952	10,958	574	21,550
1953	11,250	582	21,600
1954	11,155	670	22,374
1955	11,333	634	22,301
1956	11,925	696	23,037
1957	11,996	603	22,975
		(per cent)	
1949	47.7	2.5	100.0
1950	47.4	2.3	100.0
1951	48.2	2.7	100.0
1952	50.8	2.7	100.0
1953	52.1	2.7	100.0
1954	49.3	3.0	100.0
1955	50.8	2.8	100.0
1956	51.8	3.0	100.0
1957	52.2	2.6	100.0

Sources: a Adapted from Dominion Bureau of Statistics, The Bread and Other Bakery Products Industry.

b Dominion Bureau of Statistics Grain Milling Statistics, monthly.

TABLE 10. THE PRODUCTION OF BREAD IN THE BREAD BAKING INDUSTRY, CANADA, 1949-1957

Year	Bread Production
	(million lbs.)
1949	1,345
1950	1,380
1951	1,417
1952	1,521
1953	1,554
1954	1,523
1955	1,528
1956	1,605
1957	1,651

Source: Dominion Bureau of Statistics The Bread and Other Bakery Products Industry, Ottawa, annual.

9. Bakery Prices for All Types of Bread

Table 11 summarizes the bakeries' selling prices of bread, the cost of ingredients and cost of hard wheat flour per pound of bread sold. The ingredients are mainly of farm origin. The cost of flour per pound of bread produced decreased slightly over the 9-year period. The cost of other ingredients per pound of bread varied over the period but reached its highest level in 1957. Selling prices for all kinds of bread increased from 9.0¢ per pound in 1949 to 12.0¢ per pound in 1957, an increase of 3¢ per pound or 33.3%

10. Distribution of Bakery Product Sales By Outlet

Table 12 gives the distribution of bakery sales at wholesale and retail. The proportion of wholesale sales increased from 1949 to 1951, then declined slightly until 1957 when it returned to the 1951 level. The proportion of house to house sales decreased from 29.2% in 1949 to 24.3% in 1957. Retail sales from the bakeries' own stores remained relatively constant over the nine-year period at about 18%.

Most bakeries look upon their delivery men as salesmen, as shown by the fact that they get commissions on their sales. The delivery man is the firm's main link with the consumer. In the case of wholesale sales to retail stores, the delivery man not only sells but arranges for display space and gives advice on other selling details.

TABLE 11. BAKERIES' COST OF HARD WHEAT FLOUR, COST OF OTHER INGREDIENTS AND SELLING PRICE PER POUND OF BREAD, CANADA, 1949-1957

Year	Cost of Hard Wheat Bread Flour	Cost of Ingredients	Selling Price of Bread[a]
	(cents per pound of bread)		
1949	3.2	1.9	9.0
1950	3.4	2.0	9.5
1951	3.4	2.2	10.5
1952	3.3	1.9	10.6
1953	3.3	1.9	11.0
1954	3.3	2.0	11.4
1955	3.2	2.0	11.4
1956	3.1	2.1	11.6
1957	3.1	2.3	12.0

a Average price for all sorts of bread sold at wholesale and retail.

Source: Dominion Bureau of Statistics, The Bread and Other Bakery Products Industry, Ottawa, annual.

TABLE 12. DISTRIBUTION OF SALES IN THE BREAD AND OTHER BAKERY PRODUCTS INDUSTRY, CANADA, 1949-1957

Year	Wholesale[a]	Retail		Total Sales
		House to House	Own Stores	
1949	52.6	29.2	18.2	100.0
1950	53.6	28.6	17.8	100.0
1951	57.1	24.4	18.5	100.0
1952	56.3	25.5	18.2	100.0
1953	56.8	25.0	18.2	100.0
1954	56.9	24.3	18.8	100.0
1955	56.5	25.7	17.8	100.0
1956	56.3	25.1	18.6	100.0
1957	57.2	24.3	18.5	100.0

a Including sales to restaurants, institutions, etc.

Source: Dominion Bureau of Statistics The Bread and Other Bakery Products Industry, Ottawa, annual.

11. Estimation of the Farm-Flour Mill-Wholesale-Retail Spreads on Bread

The estimation of the price spread for wheat into bread, as for wheat into flour, uses basic data from the Canada Department of Agriculture, The price spread was calculated on the basis of a bushel of wheat used in making 65.3 pounds of bread. The farm and Lakehead prices of wheat used for the flour price spread calculation were also used in estimating the price spread on bread. The mill price is for No. 2 Patent flour, which is the grade usually bought by the bread bakeries. The wholesale price of bread is an average for Canada. The retail price used is a Canada weighted average price for plain white bread.

The calculations made of the spreads and the farmers' share over the past ten years, are summarized in Table 13.

Farm and flour mill prices declined over the decade of study, but wholesale and retail prices increased significantly. The combined result was an increase of 64.5% in the farm-retail spread on bread. It is clear from Table 13 that the increase took place between the sale of the flour from the mills and the sale to the consumer at retail, which includes bread baking (processing and wholesaling) and retailing. Of these the bakery-wholesale margin increased the fastest.

The farmer's share of the retail price dropped from 23.0% in 1949 to 12.6% in 1958. The retailer's share increased slightly over the period as a whole, and there was a substantial increase in the bakery-wholesale share from 55.1% in 1949 to 67.8% in 1957.

Out of a 24-ounce loaf of sliced white bread which cost 21.1¢ on the average at retail in 1957 the farmer received 2.6¢ for the wheat going into it, the wheat handling etc. costs to the Lakehead accounted for 1.0¢, the flour miller received 0.5¢, the bread bakery-wholesaler received 14.3¢, and the retailer received 2.7¢. Some large bakeries sell bread to chain stores under both chain brands and highly advertized bakery brands. The chain brands then retail at 2¢ to 4¢ a loaf less than either the bakery brand or house delivery.

The main reason for the widening of the farm-retail spread on bread was higher bakery costs, significant among which were labour, packaging, promotional and delivery expenses.

12. Comparison of Canada and United States Price Spreads for Wheat Flour and Bread

Canadian and U.S. price spreads cannot validly be compared for a number of reasons, the major reason being that Canadian wheat is sold under a quite different marketing system than is done by the United States. A second basic difference is a difference in the method of calculation. For example, in the case of the price spreads presented

TABLE 13. SUMMARY OF FARM-FLOUR MILL-WHOLESALE RETAIL SPREADS ON WHEAT INTO BREAD, CANADA, 1949 TO 1958

Calendar Year	Retail Price Bread[a]	Retail Equivalent Value of 1 bu.Wheat[b]	Wholesale Equivalent Value of 1 bu.Wheat	Flour Mill Equivalent Value of 1 bu.Wheat[c]	Farm Value of Wheat[d]	Farm-Retail Spread	Farmer's Share of Retail Value
	(¢/lb.)	($)	($)	($)	($/bu.)	($)	(%)
1949	10.0	6.53	5.55	1.95	1.50	5.03	23.0
1950	10.3	6.73	5.94	1.98	1.41	5.32	21.0
1951	11.4	7.44	6.66	1.95	1.33	6.11	17.9
1952	11.8	7.71	6.79	1.89	1.23	6.48	16.0
1953	12.0	7.84	7.05	1.85	1.31	6.53	16.7
1954	12.5	8.16	7.25	1.84	1.15	7.01	14.1
1955	12.5	8.16	7.12	1.78	1.19	6.97	14.6
1956	13.3	8.68	7.44	1.77	1.21	7.47	13.9
1957	14.1	9.21	8.03	1.79	1.15	8.06	12.5
1958	14.5	9.47	8.16	n.a.	1.19	8.28	12.6

a Weighted retail price for plain, white, wrapped and sliced bread.

b Based on 65.3 pounds of bread from 1 bushel of wheat.

c No. 2 Patent flour, 42.5 pound flour from 1 bushel of wheat.

d Canadian Wheat Board price, Fort William-Port Arthur, minus deductions for marketing charges between Lakehead price and net country elevator price and minus by-product values.

in this report, the farm price is a derived one from No. 2 Northern wheat in store, Fort William-Port Arthur. The U.S. farm price is an average price paid to farmers for all wheat. No. 2 Northern wheat, however, is the wheat used in the greatest quantity for bread baking in Canada.

POTATOES

Price Spreads on Potatoes Produced and Sold in Canada and the Main Marketing Influences Thereon

About half of the farmers in Canada grow potatoes. Although this proportion is impressive, it has been declining over the last decade. Concurrently, the average acreage grown per farmer has been increasing. Potato growing is becoming more specialized and commercialized. In 1956 still only about one acre of potatoes was grown by the average farmer, but the scale of operation ranges from supplying the needs of the farm family at one extreme to giant commercial enterprises at the other.

1. Characteristics of Potatoes Affecting their Price and Cost of Marketing

Potatoes are farinaceous tubers. Many varieties are grown in Canada, but they are generally grouped as Whites, Reds and Russets. The eastern Canada market is mainly for White potatoes, but an increasing acreage of Russets has been produced in New Brunswick. The Prairie market prefers Reds and Russets. British Columbia produces Whites for the early market and Russets as the main crop. The trend in production has been toward higher yields per acre due to improved varieties, cultural practices, pesticides and fertilizer. Research is being carried on to develop a variety of potato resistant to late blight, a widespread disease.

There is also a trend toward increased mechanization in potato growing. Harvesting may be manual or mechanical. The potatoes are usually hauled in bulk to warehouses for bulk storage. Potatoes are subject to bruising and mechanical injury due to rough handling, particularly in harvesting and grading.

Potatoes are highly perishable unless stored at about 38°F. Temperatures between 32° and 38° cause a transposition of starch to sugar. Temperatures above 38°, on the other hand, hasten respiration and sprouting. Growers without frost-proof storage have to dispose of their crop soon after harvest. Because potato harvesting is concentrated in late summer and because yields per acre vary a lot from year-to-year depending on the weather, controlled-temperature storage is a key factor in marketing. Research has been conducted with some success on chemical and other sprout inhibitors.

The expenses of assembling, storing and distributing potatoes make up the major costs in marketing. New ways of handling potatoes have been developed, such as consumer-size packaging done either at

country shipping points or terminal markets.[1] Wholesaling and retailing are the two main links in the potato distribution chain. In general, preparation is limited to washing, grading and packaging the potatoes for fresh sale. During the last decade, however, an increasing quantity of potatoes has been processed further into prepared, precooked and packaged forms.

2. General Disposition of the Supply

Trends in potato production and in the disposition of the supply over the last decade are summarized in Table 1.

TABLE 1. SUMMARY OF POTATO PRODUCTION, TRADE, PROCESSING AND CONSUMPTION IN CANADA DURING THE DECADE 1948 TO 1957

(Crop-years beginning July 1 of year shown)

	Average 1948-52	Average 1953-57
	(million pounds)	
Production	3,915.2	3,953.5
Imports[a]	112.2	208.0
Exports[b]	454.8	311.8
Used for Seed following year	318.8	295.7
Processed[c]	92.8	177.8
Waste[d]	1,002.3	1,012.1
Fresh Domestic Use	2,158.9	2,364.1

a Minus 6.5% for estimated waste, etc.
b Exports include certified seed.
c Calendar year estimates.
d Culling, shrinking and other waste allowance of 20% of crop, field-run, and another 7% of remaining 80% sold.

Sources: Dominion Bureau of Statistics Quarterly Bulletin of Agricultural Statistics, Ottawa; Trade of Canada, monthly; The Fruit and Vegetable Preparations Industry, annual.

Over the last decade there has been a slight increase in the production of potatoes in Canada, from an average of 3,915.2 million pounds during the five-year period 1948-52 to an average of 3,953.5

1 U.S.D.A. Highlights of Potato Marketing, Agriculture Information Bulletin 114, Washington, 1953, p. 55.

million pounds over the five-year period 1953-57. The estimated amounts of domestic potatoes used for seed have been decreasing both in absolute terms and relative to production. The trend in potato imports over the last ten years has been upward and the trend in exports has been downward. The United States is our major export market, but Canada also exports large amounts of table potatoes to Puerto Rico, Venezuela, Trinidad and British Cuiana. Canada exports a large volume of seed potatoes to the United States and smaller amounts to Argentina, Venezuela, Uruguay, and Cuba. Our potato imports come from the United States.

New potatoes are admitted into Canada duty-free between January 1 and June 14. Otherwise, the Canadian tariff is 37½ cents per 100 pounds on potatoes, including seed potatoes. The United States tariff on table potatoes is 37½ cents per 100 pounds for the first 600,000 bushels per year (beginning September 15). For imports in excess of 600,000 bushels the United States tariff is 75 cents per 100 pounds, excepting between December 1 and March 1 when the tariff on imports in excess of 600,000 bushels but not in excess of 1,000,000 bushels is 60 cents. The Unites States tariff on seed potatoes is 37½ cents per 100 pounds for the first 1,900,000 bushels and 75 cents for imports in excess of that.[1]

There has been a sharp increase in the amount of potatoes used in processing over the last ten years; over the last five years potatoes for processing accounted for about 7.5% of the amount of fresh potatoes entering consumption. In addition to being processed increasingly into high-priced products such as potato chips, flakes and french fries, potato starch and flour are used as materials in the food preparations industry, for example bread. The total and per capita consumption of fresh potatoes has been declining and amounted to an average of about 150 pounds per year during 1953-57. There has been a downward trend in the United States also.[2] United States per capita consumption of processed potatoes, however has increased substantially.[3]

3. Geographical Pattern of Production, Marketing and Farm Prices

Table 2 contains annual figures of potato production for Canada, with the production by provinces shown as a per cent of the Canada totals, over the decade 1948-57. The sharp drop in production in 1951 was due mainly to the greatly reduced acreage but also to lower yield. In general, however, there was a definite increase in

1 Canada Department of Agriculture, Canada and the United States Tariffs on Selected Agricultural Products, Ottawa 1957, p. 14.

2 U.S.D.A. Supplement for 1956 to Consumption of Food in the United 1909-52, Agriculture Handbook 62, Washington 1957, p. 27 and The National Food Situation, Washington, July 1958, p. 4.

3 U.S.D.A. Potato Flakes A New Form of Dehydrated Mashed Potatoes, Marketing Research Report 186, Washington, July 1957, p. 53.

TABLE 2. POTATO PRODUCTION, CANADA AND PROVINCES[a] AS PER CENT OF CANADA, 1948 TO 1957

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957[b]
					(million lb.)					
CANADA	4,439.5	4,248.0	4,382.5	2,901.3	3,604.3	4,020.1	3,107.0	3,967.6	4,232.5	4,407.7
					(Per Cent of Canada Total)					
P.E.I.	13.6	18.3	14.6	12.3	18.0	15.9	19.6	17.9	16.6	20.5
Nova Scotia	4.4	4.4	4.4	4.2	4.6	4.3	4.8	4.5	3.4	4.0
New Brunswick	20.8	23.9	20.7	19.7	18.3	20.9	19.5	23.5	21.6	20.9
Quebec	25.1	21.7	25.0	26.3	22.9	24.8	22.0	24.5	23.9	26.2
Ontario	20.8	19.2	20.7	20.0	18.8	17.7	18.3	16.2	17.9	16.5
Manitoba	3.5	2.9	3.9	4.6	4.6	4.8	4.5	3.9	4.3	2.4
Saskatchewan	3.1	2.2	2.5	4.0	3.1	2.5	2.0	2.0	2.9	1.7
Alberta	4.2	3.0	4.2	4.9	5.4	4.1	3.7	3.7	5.3	3.2
British Columbia	4.5	4.4	4.0	4.1	4.4	5.1	5.6	3.9	4.2	4.7

a Excluding Newfoundland for which data are not available.

b Preliminary.

Sources: Adapted from D.B.S. Quarterly Bulletin of Agricultural Statistics, Ottawa.

potato yields per acre over the last decade, both for Canada as a whole and for the individual provinces. The Maritime provinces have had the highest yields over the decade and the Prairie provinces have had the lowest.

The largest potato-producing province is Quebec. New Brunswick, Ontario and Prince Edward Island rank second, third and fourth in potato production. Production is relatively small in the Prairie provinces and British Columbia. The shares of Quebec, New Brunswick, Manitoba, Alberta and British Columbia in total production did not change materially over the decade. Ontario's, Nova Scotia's and Saskatchewan's shares in total potato production fell, and Prince Edward Island's share increased. As far as seed potatoes are concerned, Prince Edward Island and New Brunswick account for more than 80% of total production.

Although potatoes may be grown almost anywhere there are fairly well-defined commercial producing areas in each province. Prince Edward Island and the Saint John River valley in New Brunswick are the major surplus producing areas in Canada and it is from these two provinces that Quebec and Ontario obtain the bulk of their extra supplies to supplement local production and from which the bulk of Canada's exports originate. Production in Quebec and Ontario is quite widespread, but in Manitoba is confined to the area adjacent to Winnipeg. Saskatchewan has small areas in the vicinity of Regina, and in Alberta the bulk of production is concentrated in the area south of Calgary. In British Columbia there are two main producing areas, one on the Coast and the other in the Interior.

Seasonally the earliest producing areas are southwestern Ontario and coastal areas of British Columbia. Both of the areas make substantial shipments to eastern Canada and the Prairies respectively until local crops mature. Domestic supplies in all areas are usually run down by June 30, and meanwhile the markets are increasingly supplied with imported potato products until the new crops mature in Ontario and British Columbia during the last week of June.

Cash income from the sale of potatoes in Canada accounted for 1.5% of total cash farm income. Among the provinces, potatoes are most important to the agricultural economies of Prince Edward Island and New Brunswick. In Prince Edward Island over the last decade, cash income from potatoes accounted for nearly 28% of total cash farm income.

Generally, farm prices for potatoes over the last decade were highest in British Columbia and lowest in New Brunswick. Farm prices for potatoes were higher in Ontario, Alberta and Saskatchewan than in the Maritimes, Manitoba and Quebec.

4. Inspection, Grading and Marketing Channels

In general, there are three main types of users of potatoes - homes, institutions and processing plants. Increasing pressure is being placed by retailers upon suppliers and producers for a continuous supply of uniformly high-quality potatoes.

Potatoes sold for consumption in inter-provincial trade[1] and for export are required to be inspected and certified. Potatoes may be shipped inter-provincially without inspection and certification if the potatoes have been graded and packed in a "Registered Potato Warehouse".[2] They may be packed in 10, 15, 25, 50, 75 and 100-pound bags. With the development of self-service retailing, the emphasis has been toward smaller packages. Crates are also permitted, but these are used only for export. Shippers and wholesalers dealing in the inter-provincial and international trade are required to be licenced. There are approximately 850 such licences issued annually of which about 80 are brokers.

When U.S. potato grade standards were raised in 1955, Canadian minimum size standards also had to be raised for the sake of our export trade. But perhaps the most influential change in recent years was the introduction of smaller consumer-size packages. Since the permitted tolerance of grade defects is more apparent in these smaller packages, a more uniform size and quality of product was required.

Grading and packing may be done either by the grower or shipper. If by the grower, he delivers the graded product packed and ready for shipment. If by the shipper, the grower delivers field-run potatoes to a warehouse owned by a shipper who grades and packs and pays the grower on the quantity packed out to grade specifications. The surplus or culls may be hauled back to the farm for feed or in the case of New Brunswick may be sold to a starch factory. In many instances where growers are adjacent to the larger cities and towns they may deliver potatoes direct to the wholesaler or retail chain store, in large or small bags. Some chains buy in the larger containers and re-pack to 10-pound bags.

Storage usually takes place at shipping points although in some seasons and at times dealers may be inclined to purchase heavily in anticipation of a rising market and store on their premises or in public storages at destination markets. Producers having adequate storage space may sell, or hold potatoes for periods varying from a few weeks to eight or nine months depending upon the weather, the type of storage and the market outlook, both domestic and in the United States. The decision is more or less speculative. Usually the period of largest marketings occurs in the autumn following the harvest. The months of largest storage are November, December and January, and the months of smallest storage are July through October.[3]

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1 Excluding potatoes shipped from the Prairie Provinces and Quebec.

2 Canada Department of Agriculture, The Fruit, Vegetables and Honey Act and Regulations, Ottawa 1958, pp. 20-22, 27-29, 33-35, 100-103 and 118.

3 Dominion Bureau of Statistics, Stocks of Food Commodities in Cold Storage and Other Warehouses, Ottawa, annual.

Sales made to wholesalers by shippers may or may not include the services of a broker. If so, a standard confirmation of sale is issued on which is detailed the terms of the contract. The trade is also subject to the Standard Definitions of Trade Terms as outlined on the reverse side of the confirmation of sale. The terms of sale in eastern Canada are "delivered", that is the onus is on the shipper to deliver at the buyer's market a carload or trucklot which will meet the contract. In western Canada the terms are usually "f.o.b." which means the shipper is responsible for placing the potatoes free on board the car or truck in suitable shipping condition and the transit risk is assumed by the buyer.

5. Year-to-Year Variations in Supply and Price

The production and farm and retail prices of potatoes in Canada for the nine crop-years 1949/50 to 1957/58 are presented in Table 3. In order to facilitate comparison, production and prices are also shown in index form in the table. The price is highly sensitive to annual changes in production and supply.[1] The size of the U.S. crop also influences Canadian prices, of course. The 1951 potato crop in Canada, was about 30% smaller than in 1950. By mid-October of 1951, wholesale prices of New Brunswick potatoes in Montreal had doubled their 1950 price. Based on 1949 prices equal to 100, potato price indexes for the 1951/52 season reached 240 at the farm and 168 at retail. Other year-to-year changes in price were less violent over our period of study, but they were not mild either.

The 1950 crop had been very large, and prices low. Towards the latter part of the 1950/51 season, federal assistance was made to the New Brunswick and Prince Edward Island potato marketing boards under the Agricultural Products Co-operative Marketing Act. Over a million bushels of potatoes were diverted by the marketing boards to starch factories.

In 1958, by mid-year, substantial supplies of Prince Edward Island potatoes remained unsold from the 1957 crop. In July, the federal Agricultural Stabilization Board agreed to purchase these unsold potatoes at 36 cents per bushel, that is 60 cents per 100 pounds.

6. The Seasonal Pattern of Price Variability

Mention has already been made of the fact that normally the season of heaviest marketings of domestic potatoes is autumn, especially the months of October and November. Afterwards marketings tend to

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1 The economist says that the demand for potatoes is highly "inelastic" with respect to price. It has been estimated that a 1% change in supply results in an inverse change in price of about 3⅓% - U.S.D.A. Bulletin 114, p. 55.

TABLE 3. POTATO PRODUCTION AND RETAIL PRICE, CANADA, CROP-YEARS[a] 1949/50 TO 1957/58

Crop-Year	Production	Weighted Farm[b] Price	Weighted Retail Price[b] No.1,10-lb.	Production	Farm Price	Retail Price
	(million pounds)	($/cwt.)	(cents/bag)	(1949/50 = 100)		
1949/50	4,248.0	1.53	34.9	100.0	100.0	100.0
1950/51	4,382.5	1.30	29.7	103.2	85.0	85.1
1951/52	2,901.3	3.67	58.5	68.3	240.0	167.6
1952/53	3,604.3	2.75	51.2	84.8	179.7	146.7
1953/54	4,020.1	1.25	31.2	94.6	81.7	89.4
1954/55	3,107.0	2.52	49.4	73.1	164.7	141.6
1955/56	3,967.6	1.80	43.0	93.4	117.7	123.2
1956/57	4,232.5	1.93	44.0	99.6	126.1	126.1
1957/58	4,407.7	1.75	45.3	103.7	114.4	129.8

a Crop-years for retail price purposes here taken as August 1 to July 30.

b Canada monthly prices prior to 1955/56 weighted by the average monthly pattern of the domestic unloads during the three years 1955-57; from 1955/56 on the actual monthly distribution of unloads in each year was used.

Sources: Adapted from Canada Department of Agriculture Current Review of Agricultural Conditions in Canada, annual Situation issue, and Annual Unload Report, Fresh Fruit and Vegetables Ottawa; and Dominion Bureau of Statistics Prices and Price Indexes Ottawa, monthly.

decrease to February, rise again to a secondary peak in April and then fall to a minimum in June and July. Prices are lowest in autumn when potato marketings are heaviest and highest in summer when marketings fall to a minimum. Prices at the different levels tend to move up or down together from month to month. This pattern of seasonal price variability at both farm and retail is summarized for nine years of the decade of study in Table 4. Generally speaking, when prices are highest seasonally, the farmer's share of the retail price is highest. It is not so true to say that the farmer's share is lowest when prices are lowest, however. The season of lowest farm shares is the months of November through February.

7. Estimating the Farm-Wholesale-Retail Values and Spreads for Potatoes

Because of limitations of information only approximate measurements can be made of the farm-wholesale-retail values and spreads for table potatoes in Canada over the last decade. Several more-or-less arbitrary assumptions had to be made. The calculations involved are summarized in Table 5. The values are computed on the basis of 100 pounds of potatoes sold by the farmer.

D.B.S. publishes monthly urban retail prices of potatoes basis No.1 grade in 10-pounds bags.[1] The Canada monthly prices are based on quotations from 33 cities - a simple average of independent store price quotations and a weighted average of chain store quotations based on fixed city population weights. It was desirable to derive seasonally weighted retail crop-year prices for Canada. This was done by weighting Canada monthly prices by monthly domestic unloads. Monthly unloads are the only figures on marketings available on a systematic basis with which to weight monthly prices. While not complete they do represent a large proportion of the monthly marketings. The unload data are published annually by the Canada Department of Agriculture.[2] Unfortunately, only from 1955 on have truck as well as rail unloads been recorded. For this reason, the years prior to 1955/56 were weighted by monthly unloads over the three years 1955/57. Subsequent years were weighted by their own monthly unloads.

Wholesale prices are published by D.B.S.[3] for eight cities (Halifax, St. John, Montreal, Toronto, Winnipeg, Regina, Calgary, Edmonton, Vancouver) basis No.1 grade in 75-pound bags, but not for Canada. To derive weighted wholesale crop-year for Canada, therefore,

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1 Dominion Bureau of Statistics, Prices and Price Indexes, Ottawa, monthly.

2 Canada Department of Agriculture Annual Unload Report, Fresh Fruit and Vegetables on 12 Canadian Markets, Ottawa, annual.

3 Dominion Bureau of Statistics Quarterly Bulletin of Agriculture Statistics, Ottawa (In 1956 Calgary was replaced by Edmonton.)

TABLE 4. MONTHLY PATTERN OF FARM AND RETAIL POTATO PRICES, CANADA, AVERAGE NINE CROP YEARS[a], 1949/50 - 1957/58

Month	Per cent of annual Retail Price[b]	Per cent of annual Farm Price[c]
August	113.2	123.7
September	91.4	88.6
October	84.1	85.3
November	85.8	82.5
December	90.5	83.9
January	92.7	89.1
February	95.6	91.0
March	95.8	95.7
April	101.0	110.4
May	108.6	100.5
June	113.7	107.6
July	126.4	140.8

a Crop-year taken here as August to July because prices usually reach a maximum in July.

b No. 1 Grade.

c All grades sold.

Sources: Adapted from D.B.S. Prices and Price Indexes, monthly, and and Canada Department of Agriculture Annual Unload Reports, Fresh Fruit and Vegetables, Ottawa.

it was decided to weight monthly city wholesale prices by city unloads, and then weight city wholesale crop-year prices by city crop-year unloads.

Farm prices here are average prices received by growers from sales of all grades of potatoes. The crop-year used for farm, wholesale and retail prices is August to July. The highest monthly wholesale and retail prices usually came in July, although some new potatoes are marketed in that month. Weighted crop-year farm prices were obtained by weighting Canada monthly farm prices by the monthly unloads used in deriving a weighted Canada retail price.

Waste in potato marketing has sometimes been calculated at

TABLE 5. SUMMARY OF FARM-WHOLESALE-RETAIL SPREADS ON POTATOES[a] CANADA, CROP YEARS[b] 1949/50 TO 1957/58

Crop Year	Retail Price[c]	Retail Value Equivalent of 100 lb. Farm Sale[d]	Wholesale Value Equivalent of 100 lb. Farm Sale[e]	Farm Price[f]	Farm-Retail Spread	Farmer's Share of Retail Value
	(¢/10 lb.)	($)	($)	($/100 lb.)	($)	(%)
1949/50	34.9	3.24	1.87	1.53	1.71	47.2
1950/51	29.7	2.76	1.59	1.30	1.46	47.1
1951/52	58.5	5.44	4.28	3.67	1.77	67.5
1952/53	51.2	4.76	2.95	2.75	2.01	57.8
1953/54	31.2	2.90	1.62	1.25	1.65	43.1
1954/55	49.4	4.59	3.00	2.52	2.07	54.9
1955/56	43.0	4.00	2.45	1.80	2.20	45.0
1956/57	44.0	4.09	2.60	1.93	2.16	47.2
1957/58	45.3	4.21	2.69	1.75	2.46	41.6

a Canada No.1 grade white table potatoes at wholesale and retail but all sales at farm.

b Crop-year August 1 to July 31.

c Canada monthly retail prices prior to 1955/56 weighted by domestic unloads during the three years 1955-57, and yearly thereafter.

d Assuming 7% waste between farm and retail sales.

e Monthly wholesale prices for 8 major cities, prior to 1955/56 weighted by city unloads during 1955-57, and yearly thereafter. Assuming 6% waste between farm and wholesale sales.

f Monthly farm prices prior to 1955/56 weighted by domestic unloads during 1955-57, and yearly thereafter.

Sources: See text.

7%,[1] and at other time at 4.1%.[2] The United States Department of Agriculture assumes a waste in marketing potatoes at 4.2%.[3] It was decided here to assume a waste of 7%, and to attribute it mainly to the farm-to-wholesale stage in marketing. A waste of 6% was allowed for between farm and wholesale sale and a waste of 1% between wholesale and retail sale.

Table 5 clearly shows how in the short crop-year 1951/52 (previously mentioned), potato prices soared at all levels, particularly at the farm. The farmer's share rose in that year to about 68% from 47% in the previous two years. In 1953/54 the farmer's share dropped to 43%. In 1956/57 the farmer's share was back at 47%, where it had been at the beginning of the period. Comparing the first and second halves of the period in Table 5 suggest that the farmer's share has fallen, but this is mainly attributable to the extremely high farm share in the crop-year 1951/52. Over the period as a whole, the farmer's share amounted to about 51%. There was a definite widening of the farm-retail price spread in absolute terms, comparing the second half of the period of study with the first half. The widening took place in both the farm-wholesale and retail components of the farm-retail spread.

The transporter-wholesaler's share (or combined transporter-broker-wholesaler share) amounted to about 11½% of retail value over the period as a whole. The combined share narrowed while the farmer's share widened in the early years of the period, however, and then the share widened as the farmer's share contracted to its initial size. Brokerage was 2-2/3¢ to 4¢ per 100 lb., which would amount to about ¾ of 1% of the retail price.

The retailer's share averaged about 37½% of retail value over the period as a whole, with no definite upward or downward trend discernible. The retailer's share was more stable than either the farmer's or wholesaler's shares.

The reasons for the widening of the farm-retail spread appear to have been higher labour and material costs of packaging, higher transportation costs and constant per cent markups at wholesale and retail on a rising farm price.

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1 D.B.S. Handbook of Agricultural Statistics, Part IV, Food Consumption in Canada 1926-55, Reference Paper 25, Ottawa 1958, p. 3.

2 Canada Department of Agriculture price spread data in the Economic Annalist, August 1958, p. 94.

3 U.S.D.A. Farm-Retail Spreads for Food Products, Agricultural Marketing Service, Misc. Pub.741, Washington 1957, p. 129.

8. Comparison with the United States

In view of the fact that United States estimates of potato price spreads assumed a waste in marketing of 4.2%, in contrast with our assumption of a 7% waste, the farmer's share in the United States would work out to be smaller than that of the Canadian farmer. Moreover, there are other known and unknown elements of incomparability.[1] Directions of change, if not levels, in the Canadian and United States figures should be comparable, however. With this in mind, we have shown the data on farmer's share for the two countries in Table 6 with waste assumptions for Canada of both 4.2% and 7%. Even if only 4.2% waste is assumed in marketing Canadian potatoes, the Canadian farmer's share of the retail value was usually higher than for his United States counterpart.

TABLE 6. COMPARISON OF FARMER'S SHARE OF RETAIL VALUE OF POTATOES, UNITED STATES AND CANADA, 1949 TO 1957

	United States[a]	Canada[b]	
	4.2% Waste	4.2% Waste	7% Waste
1949/50	47	46	47
1950/51	40	46	47
1951/52	42	65	68
1952/53	51	56	58
1953/54	35	42	43
1954/55	34	53	55
1955/56	34	44	45
1956/57	39	46	47
1957/58	28	40	42

a Calendar years.
b Crop-Years 1949/50 to 1957/58.
Sources: U.S.D.A. Farm-Retail Spreads for Food Products, Agricultural Marketing Service, Misc. Pub. 741, Washington 1957, pp.41 and 129, The Marketing and Transportation Situation, Washington, January 1958, p. 47 and this study, Table 5.

1 For example, the U.S. figures are for calendar years and ours are for crop-years.

TOMATOES

1. Characteristics of Tomatoes Affecting Their Price and Cost of Marketing

Field tomatoes are a highly perishable crop and they must, therefore, be delivered quickly to the processing plant or to the ultimate consumer. Before they reach the ultimate consumer, tomatoes have to be assembled, graded, packed in containers and shipped from the grower to the market or from the grower to the prepackaging plants and then to the retailers. In these operations packaging materials and labour are the most important cost factors. Another important cost factor is waste and spoilage losses which run up to 18% of the quantities handled and approximate in importance the total cost of direct labour. Thus, the care with which tomatoes are handled, both before and after they are placed in appropriate shipping containers, is of great importance in establishing grade.

Tomatoes are sold in various containers. In Ontario the most usual containers are 6-quart baskets containing 10 pounds, and 11-quart baskets containing 17 pounds. Boxes of about 30 pounds are used in Quebec, while the 4-basket crates (20 pounds) and the lugs (30 pounds) are used in British Columbia. Boxes, lugs and 4-basket crates are normally used up to the wholesaler's level. Tomatoes are usually sold to consumers in window-cartons or trays.

According to government regulations[1] field tomatoes are graded as Canada Select, Canada No. 1 and Canada No. 2. Tomatoes meeting the requirements of Canada 2 grade may be marked "Canada Domestic" when packed in baskets or hampers. All graded tomatoes have to be of one variety or similar varietal characteristics, well formed, sound, clean, of uniform state of development and properly packed. Also, hothouse tomatoes grown in British Columbia are subject to similar regulations as field tomatoes. In addition to federal regulations which apply to interprovincial and export trade, there are also provincial regulations which apply within the province to tomatoes grown for fresh market and for processing purposes.

Alternate Uses

Tomatoes are sold in a greater variety of forms than any other vegetable. Of the total tomato crop, about 20% is being marketed as fresh tomatoes and about 80% is used for processing. The most common uses of processed tomatoes are canned tomatoes, tomato juice, catsup, soups, pulp, puree, paste and sauce.

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1 Canada Department of Agriculture, The Fruit, Vegetables and Honey Act Regulations, Ottawa, 1957.

2. General Disposition of the Crop

Trends in the total supply and disposition of field tomatoes over the period 1949-58 are summarized in Table 1. After a record high crop of field tomatoes in 1948, the production dropped substantially in two subsequent years but since 1951 the annual production has increased again and remained between 600 and 800 million pounds. The changes in production are caused by the change in the total acreage used for planting and the yield per acre which in turn depends on quality of plants, weather conditions, soil, choice of location, fertilizer practices, cultural factors (such as date for field setting, planting distance, care of plants), and diseases affecting tomatoes.

However, since about 80% of the field tomatoes are used for processing, the primary factor of any eventual change in crop production would be the processor, who usually decides in advance what quantities he will need for processing and signs a contract with the growers accordingly.

3. Geographical Pattern of Production and Marketing

Although the field tomatoes are grown in most regions of Canada, the bulk of the commercial crop is produced in Ontario, Quebec and British Columbia. However, these three provinces are far from being equal in importance. The 10-year average (1949-58) shows that the principal producer is Ontario with 80.4% followed by Quebec, 13.6%, British Columbia, 4.9%, Maritimes, .7% and Manitoba, .3%.

The emergence of Southern Ontario as a principal tomato producer is due, in addition to the proximity of the large population centres, to good soil factors and the favourable climatic conditions. Whereas in many parts of Canada, tomato growing is a side-line activity, in Southern Ontario, and more specifically in Essex and Kent counties, it is an important cash crop.

Tomatoes for Processing

The bulk of field tomatoes for processing is grown on a basis of acreage contract between the individual grower and the purchasing processor. In Ontario and British Columbia minimum prices are established each year by negotiations between the representatives of the producers and the processors, called by provincial marketing boards. In Ontario minimum prices for processing tomatoes are established on a grade basis. The price differential between the highest and the lowest grades varies from $10 to $12 a ton. This difference in price is a stimulus to the growers for the production of high quality tomatoes.

The 1949-57 average shows that in Ontario up to 85% of the crop is sold to the processors and in British Columbia and Quebec the proportion is about 80%and 65%, respectively.

TABLE 1. FIELD TOMATOES, SUPPLY AND DISPOSITION, CANADA, 1949 TO 1958

Calendar Year	Commercial Production	Self-Supplies	Net Imports	Total Supplies	Exports	Used for Processing	Waste	Available for Domestic Use	Processed as Per Cent of Production
	(thousand pounds)								(%)
1949	536,253	90,300	90,132	716,685	605	427,501	41,647	246,932	80.0
1950	489,031	90,300	89,950	669,281	2,554	365,099	46,193	255,435	75.0
1951	718,131	90,300	94,647	903,078	2,168	581,623	50,199	269,088	81.0
1952	813,313	90,300	108,973	1,012,586	4,131	696,827	44,910	266,718	86.0
1953	653,516	90,300	108,874	852,690	3,933	500,556	55,847	292,354	77.0
1954	569,728	90,300	120,910	780,938	3,251	433,201	51,519	292,967	75.0
1955	698,385	90,300	118,547	907,232	1,554	557,376	52,745	295,557	80.0
1956	607,658	90,300	150,952	848,910	766	514,039	40,149	293,956	85.0
1957	617,727	90,300	131,562	839,589	966	548,064	29,297	261,202	89.0
1958	811,335	90,300	121,866	1,023,501	-	679,836	50,058	293,607	84.0

Source: D.B.S.

Tomatoes for Fresh Market

The available reports[1] for the years 1955-57 indicate that only about 20% of the field tomatoes sold on the fresh market are of Canadian origin. Imported tomatoes are shipped into Canada all year round and only during the summer months, July-September, are the shipments slightly smaller, because at that time the domestic crop is sold in larger quantities. As already mentioned, tomatoes are grown in many parts of Canada and the bulk of the production is usually consumed in the region or province in which it is produced. There are indeed two provinces only that send fresh tomatoes outside their borders. Ontario consumes up to 70% of its production and the remainder is shipped mostly to Quebec and the Maritimes. British Columbia retains for its own use 55% to 60% of the fresh tomatoes and the rest is sold in the Prairie Provinces. Quebec fresh tomatoes find their market almost exclusively inside the province, with very small quantities being shipped to Ottawa.

The three-year average (1955-57) of the shipments of fresh domestic tomatoes on 12 Canadian markets shows that Ontario contributes 65% of the Canadian total followed by British Columbia - 18%, Quebec - 10%, Manitoba - 5% and Maritimes - 2%.

For Toronto, Vancouver and Winnipeg markets domestic fresh tomatoes are transported almost exclusively by trucks. Cities in the Prairie Provinces, other than Winnipeg, get their shipments 100% by rail, and the Maritimes and Quebec use both transportation systems almost in equal proportions. On the whole about 70% of the domestic fresh tomatoes are shipped to the markets by trucks.

4. Year-to-Year Variations in Supply and Prices

Table 2 illustrates the year-to-year variations in total production and prices over the period 1949-58. There have been considerable year-to-year variations in tomato-crop production and in prices, but there appears to be no direct relationship between the variations in the quantities produced and the prices. In comparing the indexes of production and prices which are presented in Table 2, one can see that in 1953 when there was a decrease in the crop production the farm prices went down also, and in 1954, with still further decrease in the production, the farm prices went up. Similar variations in the production as well as in the farm and retail prices could be noted during the whole decade 1949-58. Farm prices seem to depend to a greater extent on the availability of stocks of processed tomato products at the beginning of the season and on the price of imported tomatoes and tomato products than upon domestic tomato production. For example, in 1952, when the crop was the highest during the decade 1949 to 1958, farm prices were also the highest whereas the stock of tomato products in that year was the lowest of the decade. The year-to-year variations in retail prices

1 Canada Department of Agriculture, Annual Unload Report Fresh Fruits and Vegetables on 12 Canadian Markets, Ottawa, Annual.

of canned tomatoes have also been caused more by the availability of stocks than by the size of the crop.

TABLE 2. INDEXES OF TOTAL PRODUCTION, RETAIL PRICES AND FARM PRICES AND STOCKS OF CANNED TOMATOES, CANADA, 1949 TO 1958.

Year	Production	Farm Price	Retail Price	Stocks of Canned Tomatoes on Jan.1
		(1949 = 100)		
1949	100.0	100.0	100.0	100.0
1950	91.0	106.0	88.0	119.1
1951	134.0	137.0	115.0	55.5
1952	152.0	151.0	143.0	28.0
1953	122.0	133.0	121.0	100.9
1954	106.0	139.0	107.0	106.8
1955	130.0	132.0	131.0	45.4
1956	113.0	148.0	136.0	56.7
1957	115.0	133.0	145.0	68.1
1958	151.0	n.a.	132.0	69.3

Source: D.B.S. The Fruit and Vegetable Preparations Industry, Annual, Handbook of Agricultural Statistics, Part V, and the Prices Section.

5. Seasonal Variations in Prices

Seasonal variations in wholesale and retail prices for canned tomatoes and retail prices for fresh tomatoes over the decade 1949-58 are shown in Table 3.

Because the farm prices for canning tomatoes are negotiated prices and usually do not change during the season, this has had certain stabilizing effects on the wholesale and the retail prices for processed tomatoes. However, the wholesale prices do show more pronounced variations during the year than the retail prices of canned tomatoes. They are above annual average during the winter months and below the annual average between March and September.

In contrast to prices for processed tomatoes the prices for fresh tomatoes indicate strong seasonal variations at both retail and

TABLE 3. INDEXES OF MONTHLY TOMATO PRICES, CANADA RETAIL, AND ONTARIO F.O.B. FACTORY, WHOLESALE, 1949 TO 1958.

(Annual Averages = 100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Fresh Tomatoes Retail	110	115	113	113	110	109	124	82	53	66	94	110
Canned Tomatoes Retail	100	100	100	100	100	100	100	100	99	98	100	101
Canned Tomatoes Wholesale	103	101	100	99	99	98	98	97	98	100	105	104

Source: D.B.S.

TABLE 4. INDEX OF WEEKLY PATTERN OF WHOLESALE PRICES FOR FRESH TOMATOES, TORONTO, JUNE-OCTOBER, 1950 TO 1957.

(Average of 16 weeks = 100)

	June	July					August				September				October	
	Last week	1st week	2nd	3rd	4th	5th	1st week	2nd	3rd	4th	1st	2nd	3rd	4th	1st week	2nd
Wholesale Prices	280	274	219	209	118	68	55	46	45	42	39	36	41	45	43	41

Source: Canada Department of Agriculture, Crop and Seasonal Price Summaries, Annual.

wholesale levels.[1] Especially at the end of June or the beginning of July, when the new crop of field tomatoes enters the market, there is a significant drop in wholesale and retail prices. Table 3 illustrates the changes in retail prices for fresh tomatoes for the whole year and Table 4 shows changes in wholesale prices between June and October, when domestic field tomatoes are marketed. Although Table 4 gives prices for Metropolitan Toronto only, it is quite representative for other Canadian markets.

6. Retail Prices - Selected Cities

There has been a marked difference in the trends of retail prices for fresh and canned tomatoes in major Canadian cities. Between 1952 and 1958 retail prices for fresh tomatoes increased by about 50% in Vancouver, 40% in Toronto and Montreal and 25% in Winnipeg and Halifax. For the same period retail prices for canned tomatoes showed a decrease in all cities mentioned, ranging from about 2% to 12%. The biggest decline in prices occurred in Montreal and the smallest in Halifax.

7. Estimating the Farm-Processor-Retail Spreads for Canned Tomatoes.

Canned tomatoes are the only tomato product for which farm, processor and retail prices are available, thus enabling the measurements of farm-processor-retail spreads and the processor's and farmer's share of retail value.[2]

In estimating farm-retail spread for canned tomatoes one should keep in mind that the farm price for canning tomatoes is an average price received by the growers for all grades and varieties and the retail price is for choice quality only, consequently, the farmer's share is, to some extent, on the low side.

The summaries of calculations of farm-retail spreads for canned tomatoes are shown in Table 5. In these calculations it was assumed that seven-tenths of canned tomatoes sold to the consumers in any one year come from the previous year's crop and that three-tenths are from the current year's crop.

There have been wide fluctuations in retail and processor prices over the decade. Farm prices have shown smaller fluctuations. The farm-retail spread for canned tomatoes is much more variable than for other canned vegetables. Between 1950 and 1952 it increased from $94 per ton to $159 per ton and then decreased sharply for the next two

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1 Farm prices for fresh tomatoes not available.

2 While the value of factory sales of tomato juice is higher than for the canned tomatoes, there are no retail and wholesale prices available for tomato juice.

TABLE 5. SUMMARY OF FARM-PROCESSOR-RETAIL SPREADS ON CANNED TOMATOES, CANADA, 1949 TO 1958[a]

Calendar Year	Retail Price[a]	Retail Equivalent Value of 1 Ton Fresh[b]	Processor Selling Value Equivalent of 1 Ton Fresh[b]	Farm Price Calendar Year Basis[c]	Farm-Retail Spread	Processor's Share of Retail Value	Farmer's Share of Retail Value
	(¢/28-oz. tin)	($)	($)	($/ton)	($)	(%)	(%)
1949	20.1	135	81	27	108	39.7	20.0
1950	17.7	119	92	25	94	56.1	21.3
1951	23.1	155	118	29	126	57.4	18.5
1952	28.8	194	117	35	159	42.2	18.2
1953	24.4	164	93	36	128	34.7	22.1
1954	21.5	145	122	34	111	61.0	23.3
1955	26.3	177	113	34	143	44.5	19.3
1956	27.3	184	140	34	150	57.4	18.6
1957	29.1	196	117	36	160	41.7	18.3
1958	26.6	179					

a Price for 28-oz. tin, choice.

b 1 lb. canned taken as equal to 1.70 lb. fresh.

c Average price for all grades and varieties going into processing. It is assumed that seven-tenths of canned tomatoes sold to consumers in any one year come from the previous year's tomato crop and three-tenths are from the current year's tomato crop.

Source: D.B.S., Prices Section and The Fruit and Vegetable Preparations Industry, Annual.

years. Over the period under study, processor and retail prices increased, and also, but to a lesser extent, farm prices. The farmer's share increased from 20.0% in 1949 to 23.3% in 1954, but then declined to 18.3% in 1957. The spread widened mainly because of increased processing costs. In addition, canned tomatoes were imported in increasing quantities over the decade, and the spread was widest in the years of heavy imports.

8. Comparisons with the United States

The comparisons of the farmer's share between Canada and the United States over the period 1949-57 are shown in Table 6. Taking into account some differences in conversion factors, the farmer's share in both countries does not differ substantially over the period under study. The farmer's share shows a downward trend in both countries, but in the United States it is more pronounced. Canadian retail prices for canned tomatoes show larger variations from year to year than those in the United States and this explains in part why there are wider year-to-year differences in the farmer's share in Canada than in the United States.

TABLE 6. FARMER'S SHARE ON CANNED TOMATOES, CANADA AND THE UNITED STATES, 1949 TO 1957.

	1949	1950	1951	1952	1953	1954	1955	1956	1957
	(per cent)								
Canada	20	21	19	18	22	23	19	19	18
United States	20	18	16	19	18	16	15	15	16

Sources: United States Department of Agriculture, Farm-Retail Spread for Food Products, Agricultural Marketing Service, Misc. Pub. 741, Washington, 1957, p. 132, The Marketing and Transportation Situation, Quarterly, and this study, Table 4.

PEAS

The pea plant will grow over a fairly wide range of soil types, but its yield and quality will vary greatly with weather conditions. A cool growing season with frequent rainfall is favourable to the increased production of tender, sweet peas of good colour. Also of great importance is the decision as to when harvesting should begin, because this decision affects the yield and the quality of green peas. The processor is concerned with getting peas of top quality, while the farmer, in addition to that, is also interested in obtaining a large yield in pounds per acre. Pounds per acre are greatest when peas are allowed to ripen to full maturity, but the average quality of peas is higher if peas are harvested before this point. To achieve the optimum result, the very closest co-operation and advance planning between processor and farmer is required. For that purpose a schedule of planting, harvesting and processing is worked out ahead of time. When the desired maturity has been reached, usually the processor's field man calls for the harvesting to begin. Tractor-drawn mowing machines cut the vines, which are then automatically loaded into trucks and driven to the viner. This is a machine which shells the peas. The peas are then loaded in boxes and immediately sent to the processing plant, where they are graded with the help of the "tenderometer".

Peas canned in registered establishments are examined by a Canada Department of Agriculture inspector. The canned peas are graded into Canada "Fancy", Canada "Choice" and Canada "Standard". Each of these grades is usually subdivided into five sizes of pea from No. 1, the smallest, to No. 5, the largest, but they may also be canned unsized.

Over the period under study, the yield per acre was increasing from a low of 1,700 pounds in 1949, to a high of 2,700 pounds in 1957, with an average for the whole period of 2,100 pounds. The years 1957 and 1958 were particularly favourable for high yield and high quality of peas. Of the total canned peas produced in these two years, about 50% were graded as "Fancy", 35% "Choice" and 15% "Standard" and other.

Geographical Distribution

The leading provinces in the production of peas for processing are Ontario, Quebec and British Columbia, but peas for processing are also grown in the Prairies and Maritime Provinces. Over the decade of study, central Canada accounted for 74% of the total contracted acreage, Prairies 12%, British Columbia 10% and the Maritimes 4%. The main areas of contracted acreage are located in western Ontario, the St. Lawrence lowlands in Quebec, the Fraser River valley in British Columbia, the Tabor-Brooks-Lethbridge area in Alberta, the Lake Winnipeg area in Manitoba, the St. John River valley in New Brunswick, and the Annapolis Valley and Pictou County in Nova Scotia.

The contracted acreage increased irregularly from 1949 to a record high in 1955, and then decreased to the end of the decade. On the whole, the contracted acreage for peas for processing has shown an upward trend. The year-to-year variation in contracted acreage was closely related to the stocks of canned peas at the beginning of each year.

It is the practice of firms engaged in processing of peas to sign contracts with growers at an agreed minimum price early each year for the acreages they will require for the season's activities. A major purpose of such contracts is to provide assurance of supply to the processors. This policy of adjusting production has a stabilizing effect on prices, as during the season there are very slight seasonal variations in prices at the farm, processor or retail levels.

Canned Peas

Supply and Disposition

Over the decade 1949-58 the commercial production of green peas showed an upward trend and averaged close to 100 million pounds per year. The quantity used for processing (canning and freezing) represented about 93% of the reported total production. Of the total amount of green peas purchased by the processors, about 80% was used for the production of canned peas. Canned peas are not only the most important of all forms of peas used for consumption, but are also one of the principal canned vegetables. Over the period under study, canned peas alone accounted for more than one-fifth of all canned vegetables in terms of pounds of product.

Table 1 shows the supply and disposition of canned peas over the decade 1949-58. The production of canned peas, which has been increasing over the period under study, has changed significantly from year to year. The changes in production are, to a great extent, influenced by the availability of stocks at the beginning of the year, which in turn influences the size of contracted acreages. For example, the second largest stocks of canned peas at the beginning of 1949 caused the drop in production of canned peas to its lowest level in the decade. Similar inverse relationships can be observed in other years. Also, imports and exports are influenced by stocks and production, but the relationship is not so evident because here a more decisive factor could have been the differences in prices between domestic and foreign canned peas. Over the period as a whole, imports exceeded exports, but not conspicuously. Neither imports nor exports accounted for more than 1% of production. From Table 1 it can also be seen that, over the decade, per capita consumption remained fairly stable and the increase in total domestic disappearance was a result of the increasing population.

TABLE 1. CANNED PEAS, SUPPLY AND DISPOSITION CANADA, 1949 TO 1958

Calendar Year	Stocks at Jan. 1	Production	Imports[a]	Stocks at Dec. 31	Exports[a]	Apparent Domestic Disappearance Total	Apparent Domestic Disappearance Per Capita
	(thousand pounds)						(pounds)
1949	103,193	61,251	-	65,595	1,127	97,722	7.3
1950	65,595	71,273	39	42,520	706	93,681	6.8
1951	42,520	115,024	87	62,475	533	94,623	6.7
1952	62,475	96,395	491	63,392	360	95,609	6.6
1953	63,392	98,225	1,851	67,254	304	95,910	6.5
1954	67,254	100,103	1,695	71,683	449	96,920	6.4
1955	71,683	134,056	1,038	94,894	947	110,936	7.1
1956	94,894	103,589	1,642	85,810	2,164	112,151	7.0
1957	85,810	146,785	1,791	110,394	954	123,038	7.4
1958[b]	110,394	88,799	499	96,616	969	102,107	6.0

a 16% was deducted from Trade of Canada figures to allow for weight of containers.

b Preliminary.

Source: Adapted from D.B.S., The Fruit and Vegetable Preparations Industry, Ottawa, Annual; Pack of Canned Fruits and Vegetables, Ottawa, Annual; Stocks of Canned Fruits and Vegetables, Ottawa, Quarterly; and Trade of Canada, Ottawa, Annual.

Estimating the Farm-Processor-Retail Price Spreads for Canned Green Peas

The basis of calculation is one ton of peas sold by the farmer for processing. Farm prices are weighted regionally by size of pack to derive the average for Canada. Retail prices are for "Choice" 20-ounce tins of unsized peas. The estimates of farm-processor-retail spreads on canned peas are summarized in Table 2.

Retail prices increased between 1949 and 1953, and then declined, except for 1957. Processor selling prices, in general, followed the pattern of retail prices. Farm prices increased rapidly from 1949 to 1952, and then remained fairly steady, weakening a little. The farm-retail spread increased between 1949 and 1953, and then narrowed to 1956, widening again in 1957. The increase in combined wholesaler-retailer spread was larger than the increase in processor spread.

The farmer's share of the retail value shows a slight upward trend over the period, from 19.3% in 1949, to 20.3% in 1957. The processor's share of the retail value ranged from a high of 67.1% in 1951, to a low of 52.7% in 1955, and averaged 59.6% over the period.

TABLE 2. SUMMARY OF FARM-PROCESSOR-RETAIL SPREADS ON CANNED PEAS, CANADA, 1949 TO 1957

Calendar Year	Retail Price[a] (¢/20-oz. can)	Retail Equivalent Value of 1 Ton Farm Sale[b] ($)	Processor Equivalent Value of 1 Ton Farm Sale[c] ($)	Farm Price Calendar Year Basis[d] ($/ton)	Farm-Retail Spread ($)	Processor's Share of Retail Value (%)	Farmer's Share of Retail Value (%)
1949	17.6	405	316	78	327	58.8	19.3
1950	17.4	400	328	74	326	63.5	18.5
1951	18.8	432	376	86	346	67.1	19.9
1952	20.6	474	394	98	376	62.4	20.7
1953	21.1	485	394	96	389	61.4	19.8
1954	20.9	480	376	96	384	58.3	20.0
1955	20.7	476	348	96	380	52.9	20.2
1956	20.2	464	362	98	366	56.9	21.1
1957	20.6	474	364	96	378	56.5	20.3

a Retail price for an ungraded, "Choice" 20-ounce tin of peas.

b Based on 1 lb. fresh = 1.437 lb. canned.

c Processor's selling price for canned peas of all grades and sizes.

d Average weighted price for shelled, green peas for processing. It is assumed that 54% of canned peas sold to customers in any one year come from the previous year's pea crop and 46% from the current year's pea crop.

Source: D.B.S., Prices and Price Indexes, Ottawa, Annual; and The Fruit and Vegetable Preparations Industry, Ottawa, Annual.

Frozen Peas

Frozen peas, like other frozen foods, represent a comparatively recent, and certainly a growing outlet, for farm products. Over the period of study, the production of frozen peas increased from 5.4 million pounds in 1949, to 21.2 million pounds in 1958.

Although the process of quick freezing was discovered in 1920, it was not until after World War II that the production reached a plateau in its development and the product found general acceptance.

Frozen peas is a leading product in the whole group of frozen fruits and vegetables. It has accounted for an increasing proportion of the total weight of frozen vegetables, increasing from 50.6% in 1949, to 66.3% in 1957, and averaging over 60% for the period as a whole. Also, per capita consumption of frozen peas has shown a significant increase in the same period. Per capita consumption of all frozen vegetables increased from about 0.5 pounds in 1949, to about 3.5 pounds in 1958, and frozen peas represent the largest volume in the whole group.

The popularity of frozen peas is growing because they are readily preserved in frozen form and maintain the flavour, texture and colour of fresh green peas.

Frozen peas are also used in the production of soups, baby foods, frozen mixed foods and prepared frozen foods.

General Description of Production and Processing

Peas used for freezing are grown under the same conditions of soil and climate as peas used for canning. Although there are different varieties of peas grown in Canada, and those used for canning are not necessarily the best for freezing, there are, however, few varieties which are suitable and are, therefore, used for both canning and freezing.

The processing of peas for freezing involves two separate operations, which often take place in different plants. The first operation, which is a preparation for freezing, is very similar to that of canning. The shelled peas, which have been accepted at the plant, pass through several stages of processing which consist of cleaning, blanching, sometimes grading and sizing, cooling and packaging.

Many different types of containers or packages, as to shape, size and package material, are used. The packages must have low moisture transmission, protection against contamination and attractive appearance. In view of these considerations, packages are usually a costly item.

After this preparatory operation the peas are ready for the final operation, which is freezing. As already mentioned, this can be done either in the same preparation plant, or in a separate plant. It is important, however, that wherever freezing is done it must be done

as quickly as possible in order to avoid quality deterioration. Once frozen, peas have to be stored in cold storage, and when shipped they must be kept in refrigerated railway cars or refrigerated trucks.

Frozen peas are graded as Canada "Fancy" and Canada "Choice". Plants doing the freezing of peas are under the same frequent and regular inspection by the Department of Agriculture as the plants engaged in other processing operations.

Major Producing Areas

Because of the perishability of frozen vegetables, the preparation for freezing and freezing operations have been carried on mostly in the areas of commercial production. In Canada these areas are generally small and widely distributed across the country. In the production of frozen vegetables of which peas make a major part, British Columbia has assumed the leading role, followed by Ontario and Alberta. Frozen vegetables are also produced in Quebec and the Maritimes, but in smaller quantities.

Marketing Problems

The fact that the frozen foods must not be permitted to thaw - even slightly - until they reach the consumer, creates many problems not common to other grocery products. Frozen foods have to be kept in cold storage all the time, and when transported or distributed to retail outlets, they must be delivered in refrigerated trucks. Also, the retail outlets must have freezer storage and cabinet space. Lack or shortage of these facilities makes the distribution of frozen foods costly, if not impossible. Another limiting factor in the rapid development of the Canadian frozen fruit and vegetable preparations industry is the long and thus costly transportation from Canada's main surplus producing areas in British Columbia and Alberta to large population centres in Ontario and Quebec.

In addition to the problems just mentioned, the Canadian frozen fruits and vegetables industry has to face foreign competition. Over the period studied, imports of frozen vegetables showed a great increase from less than half a million pounds in 1949, to over 20 million pounds in 1956, whereas exports remained low.

Estimating the Farm-Retail Spread for Frozen Peas

The summary of calculations of the farm-retail spread on frozen peas is presented in Table 3. The calculation is made on the basis of one ton of peas sold by the farmer for processing. The same price had to be assumed as for canned peas, and this may underestimate the farm price and the farmer's share, and overestimate the farm-retail spread. The validity of general conclusions will not be impaired, however.

Table 3 shows that the retail price for frozen peas declined from 31.5¢ for a 12-ounce package in 1952, to 23.8¢ in 1957. The farm price also declined from $98 per ton in 1952, to $94 per ton in 1957,

TABLE 3. SUMMARY OF FARM-RETAIL SPREADS ON FROZEN PEAS, CANADA, 1952 TO 1957[a]

Calendar Year	Retail Price[b]	Retail Equivalent Value of 1 Ton Farm Sale[c]	Farm Price Calendar Year Basis[d]	Farm-Retail Spread	Farmer's Share of Retail Value
	(¢/12-oz. pkg.)	($)	($/ton)	($)	(%)
1952	31.5	747	98	649	13.1
1953	30.8	731	96	635	13.1
1954	27.6	655	96	559	14.7
1955	25.6	607	98	509	16.1
1956	25.2	598	96	502	16.1
1957	23.8	565	94	471	16.6

a Retail prices not available prior to 1952.

b Retail price for "Fancy" quality peas.

c Based on 1 lb. fresh = .89 lb. frozen.

d Average weighted price for shelled, green peas for processing. It is assumed that 63% of frozen peas sold to customers in any one year come from the previous year's crop and 38% from the current year's pea crop.

Source: D.B.S., Prices and Price Indexes, Ottawa, Annual; and The Fruit and Vegetable Preparations Industry, Ottawa, Annual.

but its decline was much less pronounced. Concurrently, the farm-retail spread declined, and the farmer's share increased from 13.1% in 1952, to 16.6% in 1957.

The marked decline in retail prices of frozen peas, in spite of the increase in per capita consumption, is all the more conspicuous in contrast with the increase in retail prices of canned peas. There seem to have been three main reasons for the declining prices of frozen peas: (1) increased domestic production and larger imports; (2) better distribution facilities for frozen foods, and increased freezer space at retail and in the home; and (3) increased competition from other frozen vegetables.

Comparisons with the United States

The estimates of the farm-retail spread on canned and frozen peas indicate that over the period 1949-57 the farmer's share on canned peas in Canada has been consistently higher than in the United States,

whereas on frozen peas the opposite was true until 1954, and since then the farmer's share has been almost the same. Although there are differences between the two countries, in the quality of the product priced, and the size of containers, nevertheless, comparison indicates that certain trends are similar in both countries. Both Canadian and American farm and retail prices for canned peas show an upward trend; however, in Canada it is much more pronounced. Over the whole period, American retail prices for canned peas have been much higher than Canadian prices, whereas farm prices for canned peas were much closer. Between 1952 and 1954, retail prices for frozen peas in Canada were considerably higher than in the United States and the farmer's share lower. Since 1955, however, the prices and trends are fairly close in both countries.

CANNED CORN

Factors Affecting Quantity and Quality of Corn Produced

Sweet corn can be grown on a wide range of soil types. However, a large yield and high quality are entirely dependent on weather and growing conditions. Unfavourable weather, such as frost at the time of planting or harvesting, can affect considerably the yield and quality. Corn will be of high quality when it is ripening at high temperatures with sufficient moisture and when it is harvested at its optimum stage of maturity. Corn that is immature results in a watery pack and, if over-ripe, the kernels become hard and starchy. Sweet corn has been greatly improved for canning purposes since World War II by the development of hybrid varieties. Over the decade under study the yield per planted acre has increased from a low of 4,100 pounds in 1951 to a high of 7,000 pounds in 1958 with an average for the whole period of 5,360 pounds.

Brief Description of the Canning of Sweet Corn

Corn can be consumed in either fresh or processed form. About 90% of the sweet corn produced in the last decade has been processed and the remainder consumed on the farm or sold to the fresh market. Table 1 shows the production of sweet corn, quantities processed and the per cent of quantities processed of the total crop.

Corn is usually picked by a machine harvester. The ears of corn are then transported by truck from the field to the cannery, where the load is weighed and the farmer paid. In a modern plant, the corn passes through the various canning operations by a conveyor system.

At the plant the corn first passes through a husking machine that removes the husks. It is then thoroughly washed and passed over a sorting belt where any stock not suitable for canning is discarded. Husks and trimmings, which make up approximately one-third of the weight of unhusked corn, may be used as feed for livestock. Finally, the cobs pass through a machine cutter, which removes the kernels and makes them ready for ultimate processing.

Corn is usually processed into two main "styles" -- cream style which may be packed in brine solution or homogenized (cremogenized), and whole kernel style, which may be packed in brine or vacuum-packed. There is also a small amount of corn on the cob packed usually four to six cobs per can. The different styles of canned corn are graded into Canada "Fancy", "Choice" and "Standard". The processing plants are under frequent regular inspection by the Canada Department of Agriculture staff who examine the products and check for grade.

The quantity breakdown of the sweet corn pack for the years 1957 and 1958 is shown in Table 2. About 74% of the corn packed in 1957

was graded "Fancy" and 26% "Choice" and "Standard". In 1958, close to 70% was graded "Fancy" and the other grades combined made 30%. Also for 1957 and 1958 there were 107 thousand and 103 thousand cases of all grades which were packed as "corn on cob".

TABLE 1. SWEET CORN USED FOR PROCESSING, THE ESTIMATED PRODUCTION OF SWEET CORN AND THE PERCENTAGE USED FOR PROCESSING, CANADA, 1949-1957

Calendar Year	Quantity Used for Processing	Estimated Production	Processed as a Per Cent of Production
	(thousand pounds)		(%)
1949	291,646	326,402	89.4
1950	184,672	213,108	86.7
1951	185,752	209,307	88.7
1952	232,974	256,709	90.8
1953	172,754	193,894	89.1
1954	203,066	211,608	96.0
1955	243,344	252,820	96.3
1956	189,807	216,422	87.7
1957	279,618	307,201	91.0
1958	n.a.	311,962	-

Sources: D.B.S., The Fruit and Vegetable Preparation Industry, Ottawa, Annual. Handbook of Agricultural Statistics, Part V, Ottawa, 1940-1957, Ottawa, 1958.

Supply and Disposition

Table 3 shows the supply and disposition of canned sweet corn for Canada, over the decade 1949-58. Over the period under study the total production of canned sweet corn changed considerably from year to year. It was the highest in 1949 with 119,012 thousand pounds and the lowest in 1953 with 59,983 thousand pounds. For the decade as a whole, the average annual production was about 80,000 thousand pounds. The variations of the quantities produced are caused by the changes in the contracted acreage for sweet corn which in turn depends on the available stocks at the beginning of the season. More detailed presentation of that relationship is shown in Table 4.

TABLE 2. THE GRADE OF SWEET CORN PACK, QUANTITY PACKED AS CREAM STYLE CORN AND QUANTITY PACKED AS WHOLE KERNEL CORN, CANADA, 1957 AND 1958

Year	Style of Pack	Fancy	Choice	Standard	Total
		(thousand cases)			
1957	Cream Style Corn	1,608	816	78	2,502
	Whole Kernel Corn	1,347	n.a.[a]	n.a.[a]	1,471
	Total	2,955	n.a.[a]	n.a.[a]	3,973
1958[c]	Cream Style Corn	1,099	883	56	2,038
	Whole Kernel Corn	1,295	112	-[b]	1,407
	Total	2,394	995	56	3,445

a Less than three packing plants reporting choice and standard.

b A small amount of standard is included with the quantity of choice grade packed.

c Preliminary

Source: D.B.S. Pack of Processed Corn (Preliminary), Ottawa, Annual.

From Table 3 it can be seen that during the first half of the decade the imports of canned corn were very low and that during the second half, they increased more than ten times and exceeded exports in the last five years in the relation of five-to-one. The record high imports in 1957 were necessitated by a poor crop in 1956 and below average stocks at the beginning of 1957. The extremely heavy exports in 1951 were due to short supplies of canned corn in the United States during that year.

Table 3 also shows that annual per capita consumption of canned corn remained fairly constant at about 5.0 pounds. The increase of 25.0 % in apparent domestic disappearance that occurred over the decade was hence mainly due to population increase.

The relationship between the stocks of canned corn, contracted acreage and the production of canned corn is shown in Table 4. From that presentation it is evident that available stocks affect significantly the contracted acreage and consequently the pack of canned corn.

TABLE 3. CANNED SWEET CORN, SUPPLY AND DISPOSITION, CANADA, 1949 TO 1958

Year	Stocks Jan. 1	Total Production[a]	Imports[b]	Total Supplies	Exports[b]	Stocks Dec.31	Apparent Domestic Disappearance	Per Capita Consumption
				(thousand pounds)				(lb.)
1949	36,656	119,012	-	155,668	247	89,194	66,227	4.9
1950	89,194	64,921	c	154,115	231	84,970	68,914	5.0
1951	84,970	69,134	35	154,139	14,722	62,534	76,883	5.5
1952	62,534	91,366	39	153,939	296	86,378	67,265	4.7
1953	86,378	59,983	255	146,616	362	70,642	75,612	5.1
1954	70,642	65,249	2,964	138,855	999	61,190	76,666	5.0
1955	61,190	90,215	3,303	154,708	1,317	75,980	77,403	4.9
1956	75,988	61,923	3,638	141,549	781	57,949	82,819	5.2
1957	57,949	96,929	8,632	163,510	607	77,199	85,704	5.2
1958	77,199	82,058	3,605	162,862	716	79,083	83,063	4.9

a Cream style, whole kernel and corn on cob

b Imports and exports, less weight of containers

c Less than 500 pounds

Source: D.B.S. Trade of Canada, Annual. The Fruit and Vegetable Preparations Industry, Annual.

TABLE 4. INDEX NUMBERS OF STOCKS OF CANNED CORN, CONTRACTED ACREAGE AND PACK, CANADA, 1949-1958

(1949 = 100)

Calendar Year	Stocks of Canned Corn Jan. 1	Contracted Acreage	Production of Canned Corn
1949	100	100	100
1950	244	48	55
1951	232	76	58
1952	171	64	77
1953	236	46	50
1954	193	54	55
1955	167	64	76
1956	208	59	52
1957	159	68	81
1958	211	60	69

Sources: Adapted from D.B.S. Stocks of Canned Fruit and Vegetables, Ottawa, Annual, Quarterly Bulletin of Agricultural Statistics, and Fruit and Vegetable Preparations Industry, Annual.

Geographical Distribution of Sweet Corn Production

Sweet corn for canning is grown in all the provinces of Canada. The largest acreage, however, is located in Ontario, followed by Quebec. Smaller acreages are grown in the Prairie Provinces and British Columbia. In particular the irrigated Lethbridge-Tabor-Brooks area in Southern Alberta and the Lake of Winnipeg areas in Manitoba are steadily becoming more important in the production of sweet corn. Only a very small acreage is presently used for growing sweet corn for processing in the Maritime Provinces.

Contracted acreages of sweet corn for canning represent about 85% of the total planted area for sweet corn. The main contracted acreages are located in Western Ontario and the St. Lawrence River Lowlands in Quebec. The average contracted acreage for canning corn, over the period 1949-1958, for Ontario and Quebec was close to 82% of the Canada total. Total contracted acreage varied considerably over the 10-year period, ranging from a low of 29 thousand acres in 1953 to a high of

63 thousand acres in 1949.

It is the usual practice for the processors and growers or their representatives to sign a contract for a specified acreage of sweet corn at a negotiated minimum price, in advance of the planting season. A major purpose of such contracts is to provide assurance of supply to the processors. In Ontario and British Columbia corn is purchased on the basis of a minimum price set by the provincial marketing boards. In other provinces, the price is a matter of negotiation between the processor and the growers.

Seasonal Pattern of Price Variability

There is very little seasonal variation in prices for canned corn at the farm, processing or retail levels. Farm prices are usually negotiated previous to the planting of the season's crop and remain the same throughout the season. Processor prices usually stay at much the same level over the year. The main reason for this is that the contracted acreage and the size of pack is related to the stocks on hand previous to the planting season, and to the increasing population. Retail prices, in general, remain at much the same level over the year.

Estimating the Farm-Processor-Retail Price Spreads for Canned Corn, Canada, 1949-1958.

The estimates of farm-processor-retail spreads on canned corn for the period of study are summarized in Table 5. The price spreads were calculated on the basis of one ton of sweet corn sold by the farmer for canning.

The farm price increased from $24 a ton in 1949 to $26 a ton in 1952 and remained unchanged till 1957. The retail price has shown larger year-to-year variations than farm price but over the decade the increase was moderate. Also, annual farm-retail price spreads followed in general the year-to-year pattern of retail prices, ranging from a low of $87 per ton in 1954 to a high of $105 per ton in 1957. No upward or downward trend is discernible in the spread, however.

The farmer's share of retail price ranged from a low of 18.0% in 1950 to a high of 23.0% in 1954. In 1957, however, the farmer's share was back at 19.8%, where it had been at the beginning of the period. Over the period as a whole the average farmer's share was 20.7%. The processor's share of the retail price ranged from a low of 47.9% in 1949 to a high of 68.4% in 1951 and averaged 58.9% over the period as a whole.

TABLE 5. SUMMARY OF FARM-PROCESSOR-RETAIL SPREADS ON CANNED CORN, CANADA, 1949 TO 1957

Calendar Year	Retail Price[a]	Retail Equivalent Value of 1 Ton Farm Sale[b]	Processor Equivalent Value of 1 Ton Farm Sale[c]	Farm Price Calendar Year Basis[d]	Farm-Retail Spread	Processor's Share of Retail Value	Farmer's Share of Retail Value
	(¢/20-oz.can)	($)	($)	($/ton)	($)	(%)	(%)
1949	19.1	121	82	24	97	47.9	19.8
1950	17.5	111	88	20	91	61.3	18.0
1951	18.4	117	102	22	95	68.4	18.8
1952	19.7	125	94	26	99	54.4	20.8
1953	18.4	117	96	26	91	59.8	22.2
1954	17.9	113	94	26	87	60.2	23.0
1955	19.0	120	94	26	94	56.7	21.7
1956	18.7	118	98	26	92	61.0	22.0
1957	20.7	131	106	26	105	61.1	19.8

a Retail price for cream style, choice, 20-ounce can of corn

b Based on 1 lb. canned equals 2.525 lbs. fresh

c Processor's selling price for canned corn, for all grades and can sizes

d Average weighted price for sweet corn for processing. It is assumed that 62% of canned corn sold to customers, in any one year, comes from the previous year's crop and 38% from the current year's crop.

Comparison with the United States

Over the period under study the Canadian farmer's share on canned corn was between 2% and 9% higher than that in the United States. However, this comparison does not take into account difference in quality, the size of containers, conversion factors and methods in calculating farm and retail prices in both countries.

FRESH APPLES

Price Spreads for Fresh Apples Grown and Sold in Canada, and the Main Marketing Influences Thereon.

1. Characteristics of Fresh Apples Affecting Their Price and Cost of Marketing.

Apples have certain physical characteristics which have a definite bearing upon their popularity and upon marketing costs and price spreads. The commercial fresh apple is variably small in size and light in weight, being typically two to three inches in diameter. Federal grading regulations for the interprovincial and export trade specify a minimum of 2¼ inches and require sizing. The weight typically is three to five ounces.

The shape of the apple varies with the variety and, while being in general aesthetic, is not naturally built to conserve valuable space in marketing. The colour, which also varies with the variety, is important for eye-appeal. Canadians prefer a rosy apple. The Canada Extra Fancy grade of apple calls for 40% - 65% red, the Fancy grade for 15% - 40% red, and the "C" grade for 15% red.

The apple generally has a smooth skin with a natural waxy protective film, but nevertheless, is easily punctured. The apple is shiny if polished, but this removes the protective wax. A good apple is sound and crisp of texture, but the firmness declines with advancing maturity, and the apple is easily bruised by hail or in handling. This is partly because the apple has a high water content (about 84%). Sugar in the apple will cause the punctured flesh to turn brown and attract flies. It may spoil from the inside out, due to air in the core. The apple must have its stem attached. The apple has an appetizing aroma which could easily become contaminated if not carefully packed or stored.

The above characteristics require for the complete protection of apples in marketing a strong, firm, clean and smooth package, with apples inserted under gentle compression so that they will not roll about and bruise. The proper grading and packing of apples, therefore, is a time-consuming and costly process.

The apple is sensitive to warm temperatures, but can be kept several months in cool, humid storage. Storage may be done by the farmer, the distributor or the consumer, but usually it is done by a farmer or his co-operative. Apple storage incurs additional costs when it is regulated at about 33°F., or when it is sealed in controlled-atmosphere (CO_2). The apple is also subject to shrinkage over time due to dehydration.

There are many varieties of apples. The Canada Fruit and Vegetable Act and Regulations list 77, and 18 are mentioned in the

Department of Agriculture consumer brochures. At least a dozen varieties of apples are produced in quantity in Canada. The varieties are not all easily distinguishable and are not well known by the majority of consumers. Grading regulations normally call for uniform variety, however, and this is both a protection to the consumer and an item of cost in marketing.

The market value of apples can be impaired by natural damage in the orchard (e.g., hail, sunscald, skin puncture, limb rub, insect sting, scab, drought, windfall, etc.). The uniformity, soundness, cleanness, etc., of fresh apples has been improved by pruning, thinning, fertilizing and spraying the trees, and by other cultural and marketing practices. At least some of these practices add to the cost of a pound of apples. Moreover, the quality of the crop may vary considerably from year to year depending upon weather conditions and the effectiveness of disease and insect control. This means that there are annual variations in the quantity of cull apples available for the manufacture of by-products.

Although the apple has undergone no basic scientific changes recently, eye-appealing improvements have been made in colour and formation. Apple tree rootstocks have been developed that are winter-hardier, and smaller and easier to pick (less labour-intensive). The two broad classes of apples are "dessert" and "cooking". The trend toward less home cooking has tended to reduce the volume of cooking varieties of apples. Although some varieties are equally good for eating raw and for cooking , McIntosh, the variety in largest production, is primarily a dessert apple.

Methods of handling and terms of sale vary widely in eastern Canada. After harvesting, the fruit is stored loose in containers until graded and packed. The grading and storing may be done by individual growers or at warehouses which may be owned by shippers, growers, co-operatives or other organizations. A grower may even sell the fruit on the trees and the buyer (usually a wholesaler) may arrange to have it harvested. Growers may sell individually to wholesalers, retailers or consumers but the vast majority deliver their apples to a shipper or organization for packing through whom sales are made. The grower may be paid the current price if he sells directly to an individual shipper but, if he is a member of a co-operative, he will share equally with other members on the season's return for the variety, grade and size of apples delivered. In such cases he is paid one or more advances during the season pending the final disposition and accounting.

Terms of sale vary depending upon the nature of the transaction. To distant markets the terms are usually f.o.b., but variations may occur, e.g., a wholesaler might send his truck and pick up a load or a shipper might deliver to the buyer's premises. Depending upon the market outlook some dealers may purchase substantial quantities in the autumn and store them themselves. In such instances purchases are usually made direct from growers. If the crop is heavy and the outlook poor, dealers may purchase only in sufficient quantities to meet their immediate requirements.

In common with most other fresh fruits and vegetables the trend is toward consumer-size packages. The susceptibility of apples to bruising, however, has made the transparent plastic bags, commonly used for many other products, of doubtful value as a container. To ensure greater protection a more rigid type of container is desirable such as a small carton or the climax 6-quart basket which has been in use for many years. The cost factor no doubt favours the bag, but to ensure that the consumer receives fruit in good condition, extra careful handling is essential.

The adoption of controlled-atmosphere storage in recent years has prolonged the storage life of the McIntosh variety to as much as three months. Ordinarily this variety is past its prime by the end of February, but in controlled-atmosphere storage it is possible to keep apples in good condition until the end of June. Exposure to room temperature following this prolonged storage period, however, often results in a rapid breakdown and so movement must be expedited. There is also the question here of conflict with other varieties such as Newtown, Delicious, Spy and Winesap which are ordinarily marketed during the latter part of the season.

2. General Disposition of the Crop

Table 1 summarizes the trends in Canadian apple production, in fresh apple exports and imports, and in processing over the last two decades. The first important point is the stability in apple production over the longer run at a level of approximately 14½ million bushels. This has been obscured generally by extreme year-to-year variations, to be examined in a later section.

The long-run trend in apple exports has been downward, however, both in absolute and relative terms. Over the recent five-year period 1953-57, apple exports amounted to only 15.4% of the total crop, compared with 22.6% over the period 1948-52 and 42.3% over the prewar period 1935-39. Exports of apple products have also been declining.

In the pre-World War II period we had a large preferential market for apples in the United Kingdom. World War II abruptly reduced this because of shortages and costs of shipping, etc. The United Kingdom market has not been regained fully since then because of chronic balance-of-payments difficulties in the United Kingdom and increased production there. For two years following the currency crisis of 1952, the United Kingdom imported no Canadian apples.

The United States has become the major export market for Canadian apples. Over the period 1954-56, about 59% of our apple exports went to the United States and about 34% to the United Kingdom, compared with about 48% to each over the period 1949-51. The British West Indies are another important market for our apple exports. British Columbia, Nova Scotia and Ontario are the main apple-exporting provinces. Most of our apple exports to the United States move by rail, but it is interesting to note that many truckloads of British Columbia apples also

move to Los Angeles.[1] The United States tariff on apples is ¼¢ per pound (11.25¢ per bushel).

Apple imports to Canada have been on an upward trend since 1948, averaging 6.7% of Canadian production in the period 1953-57 compared with 1.8% in the period 1948-52 and 1.5% in the immediate pre-World War II years. Almost all of Canada's apple imports are from the United States and are conspicuous on our markets very early and late in the Canadian apple season. Canada's tariff on imported apples is 3/8¢ per pound (16.8¢ per bushel) effective only for the August 1 to May 19 period of the year.

The proportion of the Canadian apple crop that is processed has been increasing, as shown in Table 1, but not as rapidly as the decline in our net apple exports (i.e., exports minus imports). The difference is explained by the expanding consumption in Canada due to the expanding population.

Over half of the apples for processing in Canada over the last decade have gone into apple juice and concentrate. The next most important uses of apples for processing were canned and dehydrated apple products, apple sauce and pie fill. Most of the apple processing is done in Nova Scotia, British Columbia and Ontario.

TABLE 1. TRENDS IN CANADIAN APPLE PRODUCTION, EXPORTS, IMPORTS AND PROCESSING OVER THE LAST TWO DECADES

	Av. 1935-39	Av. 1948-52	Av. 1953-57
Production (thousand bushels)	14,560	14,674	14,685
Exports as % of production	42.3	22.6	15.4
Imports as % of production	1.5	1.8	6.7
Processed as % of production	n.a.	22.9	28.3

Sources: D.B.S. Quarterly Bulletin of Agricultural Statistics. Canadian Department of Agriculture, Crop and Seasonal Price Summaries, Fresh Fruit and Vegetables, and The Current Review of Agricultural Conditions in Canada.

1 U.S.D.A., Carlot Unloads of Certain Fruits and Vegetables in 100 U.S. and 5 Canadian Cities, also Truck Unloads in 39 U.S. Cities and 5 Canadian Cities, calendar year 1957, Washington, April, 1958.

3. Geographical Influences on Marketing Costs

The main physical requirements for apple growing are a temperate climate and rich, well-drained soil. Inadequate rainfall can be compensated by irrigation. The geographical distribution of apple production in Canada during the last decade is summarized by main producing provinces in Table 2.

TABLE 2. TRENDS IN RELATIVE IMPORTANCE OF MAIN APPLE PRODUCING PROVINCES OVER THE LAST TWO DECADES

	Av. 1935-39		Av. 1948-52		Av. 1953-57	
	(000 bu.)	(%)	(000 bu.)	(%)	(000 bu.)	(%)
British Columbia	5,555	38.1	7,225	49.2	5,872	41.2
Ontario	2,419	16.6	2,903	19.8	3,065	21.5
Quebec	569	3.9	1,923	13.1	2,832	19.9
Nova Scotia	5,874	40.3	2,290	15.6	2,170	15.2
New Brunswick	143	1.0	334	2.3	322	2.3
CANADA	14,560	100.0	14,674	100.0	14,261	100.0

Sources: D.B.S. Quarterly Bulletin of Agricultural Statistics. Canadian Department of Agriculture, Crop and Seasonal Price Summaries and The Current Review of Agricultural Conditions in Canada.

British Columbia is the largest producing province, with most of its apple orchards located in the Okanagan and Kootenay Valleys. British Columbia's proportion of the total apple crop has declined somewhat over the last decade, our period of study. Ontario is the next largest producer, with its apple production spread over southwestern Ontario, including the Georgian Bay area, and also along the St. Lawrence -- roughly from Kingston to Cornwall. Ontario's proportion of the total Canadian apple crop has increased only slightly. Quebec's production now exceeds Nova Scotia's, and is concentrated in several localities fairly close to Montreal. There is a smaller apple growing region near Quebec City. Quebec's proportion of the total crop increased from about 13% over the 1948-52 period to about 20% over the 1953-57 period. Compared with the pre-World War II period, Quebec's apple production has increased dramatically while Nova Scotia's production has sharply declined. Nova Scotia's apple industry was geared to the United Kingdom market. The loss of this market during and since World War II necessitated a drastic reduction and changeover in varieties grown with the

result that production has declined. In Quebec, on the other hand, non-bearing trees constitute about 25% of the tree population, and the potential for increased production within a few years is high.

New Brunswick's production has increased since the 1935-39 period. Nova Scotia's and New Brunswick's proportions of the total apple crop have remained steady over the last decade, however. Nova Scotia's apple industry is in the Annapolis Valley. New Brunswick's output is not large, and is located in the St. John River Valley. There is a very limited production of apples for local use in Prince Edward Island and the Prairie Provinces.

The density of population is the major factor in the geographical distribution of apple consumption. This means that the largest markets are in southern Ontario and Quebec, relatively close to the producing areas in those provinces, but a long and expensive haul from the British Columbia and Nova Scotia producers. The relative distances between the apple-producing and consuming regions in Canada is quite significant for a study of price spreads. The effect on price may not be in simple proportion to the distance of the haul to market. The general explanation of this would be that there are certain overlapping market areas in which the different regional producers compete.

There have been persistent differences among the four main producing provinces in average farm values of apples. Over the 1949-57 period, Quebec, New Brunswick and Ontario had the highest farm values, averaging $1.39, $1.39 and $1.27 per bushel, respectively. Nova Scotia and British Columbia had the lowest farm values of apples, averaging $.80 and $.95 per bushel over the 1949-57 period.

4. Year-to-Year Variations in Supply and Price

Canada's sunny temperate climate is well suited to the production of quality apples, but the caprice of weather (particularly hard winter freezes and late spring frosts) causes prominent year-to-year variations in the size of crops. Sometimes the effects last for more than a year.

These fluctuations in supply create many costly problems in the production and marketing of a perishable product like apples. They are probably the major factor in year-to-year changes in apple prices at all links in the marketing chain and hence in price spreads.

If the apple industry were to gear itself fully to marketing bumper crops, then there would normally be excess capacity, which is expensive to maintain. On the other hand, a marketing capacity adequate for only a small crop would frequently result in considerable waste. What results in practice, therefore, is a marketing capacity somewhere in between these two extremes, with the processing branch of the apple industry assigned the accommodating role of economic stabilizer. There is some indication of the processing branch of the industry assuming an increasingly important and independent role.

The impact of supply instability upon apple marketing can be illustrated vividly by reference to the 1955/56 crop year. This was an extremely large crop, the second largest on record. It was the occasion of the sharpest distress to the apple industry during the period under study. It will be shown in a later section of this report that in this year, the price spread reached a maximum, in both absolute and relative terms. The 1955 apple crop amounted to 19,142,000 bushels, an increase of 32% over the year before and 33% over the average production over the previous six years, 1949-54. The average farm value of the 1955 crop was 57¢ per bushel - a drop of 54% from the average value for the 1949-54 period. The size of the 1955 crop would have been enough to cause a sharp fall in price. Unfortunately, there was on hand at the beginning of the 1955/56 crop year an exceptionally large stock of processed apple products, which are to a limited extent substitutes for fresh apples and this must have aggravated the surplus supply situation. Although more apples were exported during the 1955/56 crop year, and fewer apples were imported, these changes by no means compensated for the huge crop and the increased stock of processed apples.

The 1955 apple crop in Quebec doubled over the previous year, but Nova Scotia and Ontario also made substantial contributions to the surplus supply. This raises the question as to what the chances are that a coincidence of exceptionally favourable growing conditions in three (or all) of the four major apple-producing provinces will recur, causing a sharp break in prices. In order to try to qualify the answer to this question, year-to-year changes in production for British Columbia, Ontario, Quebec and Nova Scotia were examined over the 31-year period 1926-57.

In 23 out of the 31 years (i.e., 74%) apple production in three or all of the four major producing provinces changed (up or down) together. Quebec's and Nova Scotia's output is particularly variable. In 13 out of the 31 years (42%), three or all of the four major producing provinces increased their apple output together. This suggests that there is a fair chance of apple prices across Canada dropping sharply one year in every two or three.

Other important factors affecting the year-to-year prices of apples are the level of demand and the supply of competing fruits.[1]

5. The Seasonal Pattern of Variability

Within any year, there is a seasonal price pattern for apples caused by harvesting being concentrated in the late summer and early autumn, while consumption is spread out, rather unevenly, over about three-quarters of the year. Usually October is the month of highest marketings and June and July are the months of lowest marketings. Although typically there is not an extended storage of apples on the farm, the growers participate in several instances in co-operative cold stor-

1 See Ben H. Pubols "Factors Affecting Prices of Apples" in Agricultural Economics Research, published by U.S.D.A., Washington, July,1954.

age. Sometimes these co-operatives sell to wholesalers and sometimes they act as wholesalers themselves. Considerable storage also takes place in commercial warehouses and packing plants prior to wholesaling. There is a seasonal pattern in wholesale, as well as retail, prices.

By preserving a perishable product, cold storage has increased the length of the apple-consuming season. Controlled-atmosphere storage is further extending the consuming season, with fair prospects of good quality domestic apples being available, for a price, the year around. This may reduce the extremes of the familiar seasonal price pattern, but the costliness of lengthy cold, and controlled-atmosphere storage would, to some extent, perpetuate a seasonal price cycle.

The seasonal price pattern can be illustrated most clearly by reference to D.B.S. retail apple prices of volume sellers. This has been done in Table 3 by months on an average basis over the ten crop years 1949/50 to 1957/58. As might be expected, the lowest seasonal apple prices at retail are in October and November and the highest are in July. Not many Canadian apples have been available for sale during the highest-price months, June to August, but this volume is increasing with the introduction of controlled-atmosphere storage.

The seasonal price pattern at wholesale for domestic apples has been limited to the period, September through May, as far as volume selling is concerned. According to price reporting by the Markets Information Branch of the Canada Department of Agriculture, the minimum wholesale price period varies by variety and market. For example, for Ontario Fancy McIntosh in Toronto the minimum month in recent years has been October, as one might expect, but for the British Columbia Fancy Delicious in Vancouver the minimum has sometimes been January or February and sometimes April. For Quebec Fancy McIntosh at Montreal the minimum wholesale price period is often in November, but it sometimes occurs in other months such as January, February or even April. The late minima are difficult to explain in view of the extra storage costs that must have been incurred.

6. Estimating the Farm-Retail Price Spread for Fresh Apples

The Canada Department of Agriculture does not publish price spreads for fresh apples. There are certain serious gaps in data and elements of incomparability which enable only approximate estimates to be made here.

Dominion Bureau of Statistics retail price data are for 33 cities, and in the case of apples are reported monthly for "volume sellers" and not by variety. Monthly retail apple prices by major cities are available only since July, 1952. Yearly city prices (calendar years) are simple averages of the 12 monthly figures and take no account of the pronounced unevenness seasonally in volume of apple sales. This is important when there is a seasonal variation in prices as great as has been shown to exist for apples.

Farm prices for apples sold commercially are available monthly. These prices are for all grades combined. Retail and farm apple prices,

TABLE 3. MONTHLY RETAIL PRICES OF FRESH APPLES (VOLUME SELLER), CANADA, CROP YEARS, 1949/50 TO 1957/58

	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
					(Cents per Pound)							
1949/50	12.2	9.2	5.6	9.1	8.5	9.2	9.0	9.7	10.0	10.5	11.8	12.9
1950/51	12.5	9.9	6.9	8.8	9.4	10.8	11.2	11.6	12.0	12.1	12.4	13.2
1951/52	13.4	11.9	11.2	9.6	10.1	10.5	11.2	11.6	12.4	13.6	15.0	17.6
1952/53	15.8	12.0	12.0	12.5	13.4	14.0	14.7	15.2	16.0	16.6	17.5	18.9
1953/54	18.3	14.6	13.8	13.5	13.8	14.5	14.4	15.1	16.2	17.1	17.6	18.4
1954/55	18.2	15.7	13.7	13.3	13.9	14.2	14.2	14.8	15.3	16.5	17.9	19.1
1955/56	17.8	14.4	10.4	9.9	10.5	10.9	11.4	11.7	12.7	13.8	15.1	16.0
1956/57	16.8	13.5	12.6	12.6	13.2	13.7	14.0	14.0	14.7	16.5	18.0	20.3
1957/58	18.2	14.7	12.8	12.3	12.9	13.0	13.9	13.9	15.2	17.2	19.9	22.0
Average	15.9	12.9	11.0	11.3	11.7	12.3	12.6	13.1	13.8	14.9	16.1	17.6

Source: D.B.S. Prices and Price Indexes, Monthly.

therefore, are not strictly comparable.

Apple price data at wholesale are the most detailed available, being by province of origin, major city markets, leading varieties, months, and even type of container (box, crate or bushel).

The first step made for the present estimates was to rearrange monthly retail prices from calendar years to crop years (i.e., August to July) for the nine-year period 1949/50 to 1957/58. The next step was to take account of the seasonal pattern in volume of sales. This was done by months on a crop-year basis by weighting monthly retail and farm prices by monthly domestic apple unloads.[1] Since truck unloads were not reported prior to 1955, total monthly rail and truck unloads over the three-year period 1955-57 were used as weights for crop years prior to 1955/56. After that crop-year unloads for each year were used. An allowance of 10% was made for physical waste (spoilage, shrinkage, etc.) in marketing. This is necessarily a somewhat arbitrary allowance. The farm price was then subtracted from the equivalent retail value to get the farm-retail spread in dollars per farm bushel. The farm value was also computed as a per cent of the retail value. A summary of these calculations is presented in Table 4.

According to the price spreads estimates of Table 3, the farm-retail spread on fresh apples reached a maximum in the crop year 1954/55. The absolute margin increased then from $2.38 per farm bushel in 1949/50 until 1954/55 when it reached $4.21, after which it receded to $3.82 in 1955/56 and then returned to $4.20 in 1957/58. Over the period as a whole, the farm-retail spread widened substantially.

Farm price, expressed as a proportion of equivalent retail value, increased from 32.6% in 1949/50 to a maximum of 35.5% in 1952/53, and then declined to 20.1% in 1955/56 -- a year of extremely large production. The farm share increased to 25.4% of the retail price in 1957/58. The average farm share over the period as a whole was about 30.0%.

The combined packer-transporter-broker-wholesaler share appears to have averaged about 33% , and the retailer's share, about 37%. Systematic data were not available for determining representative shares going separately to packers (shippers), transporters, brokers and wholesalers.

Several influences were at work in widening the farm-retail spread -- longer and more expensive storage (both cold and controlled-atmosphere storage); higher packing-house costs due to increased wages and a multiplicity of containers, several of which are increasingly elaborate; increased freight rates; and more advertising and promotion. Wholesale and retail margins increased.

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1 Unload data drawn from Canada Department of Agriculture Annual Unload Reports, Fresh Fruits and Vegetables.

TABLE 4. SUMMARY OF FARM-RETAIL SPREADS ON FRESH APPLES, CANADA, CROP YEARS 1949/50 TO 1957/58

Crop Year	Weighted Retail Price (¢/lb.)	Retail Equivalent Value ($)	Farm Price ($/bu.)	Farm-Retail Spread ($)	Farmer's Share of Retail Value (%)
1949/50	8.7	3.53	1.15	2.38	32.6
1950/51	9.9	4.01	1.24	2.77	30.9
1951/52	11.3	4.58	1.43	3.15	31.2
1952/53	13.7	5.55	1.97	3.58	35.5
1953/54	14.7	5.96	2.07	3.89	34.7
1954/55	14.6	5.91	1.70	4.21	28.8
1955/56	11.8	4.78	.96	3.82	20.1
1956/57	13.9	5.63	1.73	3.90	30.7
1957/58	13.9	5.63	1.43	4.20	25.4

Sources: D.B.S. Prices and Price Indexes. Canada Department of Agriculture Annual Unload Reports, Fresh Fruit and Vegetables, and Crop and Seasonal Price Summaries, Fresh Fruit and Vegetables.

7. Comparisons with the United States

For comparison, the farmer's shares for apples in Canada and the United States for the years 1949/50 to 1957/58 are shown in Table 5. The apple grower's relative share of the retail price in the United States over the whole period averaged about 43%, contrasted with the Canadian figure estimated at about 30%. In addition to being much lower, the Canadian farmer's share showed considerable variations over the period under study, ranging from a low of 20% to a high of 36%. The main reason for lower Canadian farmer's shares seems to have been much lower prices paid to apple growers in Canada than in the United States.

TABLE 5. COMPARISON OF FARMER'S SHARE OF RETAIL PRICE FOR APPLES, CANADA AND THE UNITED STATES

	United States[a]	Canada[b]
	(%)	(%)
1949/50	44	33
1950/51	41	31
1951/52	41	31
1952/53	41	36
1953/54	45	35
1954/55	45	29
1955/56	42	20
1956/57	42	31
1957/58	43	25

a July-June. Source: U.S.D.A. Farm-Retail Spreads for Food Products, Misc. Publication 741, Washington, November, 1957, p. 123.

b Aug.-July. Source: This study, Table 4.

STRAWBERRIES

1. Characteristics of Strawberries Affecting their Price and Cost of Marketing

Strawberries have a short season, with harvesting concentrated in June and July. The size of a crop and length of a particular harvesting season vary a lot with the weather conditions. A short harvesting season is not peculiar to strawberries; what makes it so important in this case is the high degree of perishability of the fruit and its vulnerability to weather conditions. The resulting effects upon the quantity and quality of the fruit can cause large year-to-year variations in price. The market price is also highly variable from day to day in response to picking conditions. If bad weather prevents picking one day, then the next day a large supply of berries reaches the market and must be sold at whatever price they can fetch.

Being an urgent and labour-intensive operation, strawberry harvesting requires a large supply of readily available labour. Children are often employed. Payment is by the amount picked.

Over-ripe berries are unattractive to the eye and fragile to the touch. They crush easily, are difficult to hull and clean, and they decay rapidly. Ripe strawberries must, therefore, be carefully hand-picked, marketed in protective containers, and distributed rapidly to avoid costly deterioration. They keep best at temperatures of 32°F. to 40°F. and a relative humidity of 85% to 90%. The mechanics of marketing fresh strawberries has not changed much during the last decade. Usually the fresh fruit is picked into the berry box, where it remains until reaching the consumer. The containers used for strawberries are the quart or six-quart basket in eastern Canada, and the pint box (or hallock) in British Columbia. These boxes in turn are packed for shipment into crates of 12 to 32 quarts, or 12 to 36 pints. The six-quart basket is considered by the housewife to be an economical way of buying strawberries for home preserving. Refrigeration is required for lengthy hauls. When sold fresh on a grade basis, interprovincially or for export, the only grade is Canada No. 1.[1]

As far as the channels of marketing fresh strawberries are concerned, what has become increasingly conspicuous are the supermarket chains dealing directly with larger growers.

The alternative to selling strawberries as fresh fruit is to preserve them by processing (freezing, canning or jams). Delivery to the processor is usually made directly by the grower. For processing, the temperature and humidity of the berries remain critical factors. Hulling of the berries may be done manually or mechanically. The

1 See The Fruit, Vegetables and Honey Act and Regulations, Ottawa.

berries are sorted to eliminate green, soft or mush berries. Sizing then takes place according to grades.[1] The fruit is washed and packed into cans, or into cardboard containers for freezing. The cans then travel along a belt through water at 180°F. for five minutes. This is to exhaust the air so that a vacuum is created when capped, which helps to retain the colour and flavour of the fruit. Hot syrup is added, and the can is sealed. It is then heated for 10 to 12 minutes at 212°F. (for a 20-ounce can). For freezing, on the other hand, a sugar syrup or dry sugar is added to the berries in their cardboard container. They are then frozen at once. In recent years, considerable improvements have been made in mechanical equipment for handling strawberries for freezing.

Strawberries for processing, which are too soft for canning or freezing, are usually made into jam, but for interim storage they may be frozen in pails or barrels or barrelled in a solution of sulphur dioxide. Strawberry jam, therefore, can normally be regarded as a by-product of the processing industry. Some housewives, however, still buy fresh strawberries for making homemade preserves and jams.

The interprovincial and export specifications for containers of fresh strawberries are set by The Fruit, Vegetables and Honey Act and Regulations, and administered by the Fruit and Vegetable Division of the Canada Department of Agriculture. Strawberry processing comes under The Meat and Canned Foods Act and Processed Fruit and Vegetable Regulations.

Enough has been said about the physical hazards and handling of strawberries to show that, whether sold fresh or in processed form, they typically incur substantial costs in production and marketing. This has a direct bearing on prices and the price spread.

2. General Disposition of the Supply

Trends in strawberry production, processing, imports and exports in Canada over the last two decades are summarized in Table 1. In recent years, the production of strawberries in Canada has fallen substantially compared with the beginning years of our 1949-58 period, and to a lesser extent compared with the prewar years 1935-39. The peak production year was 1952.

There are about 80 plants processing strawberries in Canada. Over the last decade about 17.6% of the strawberries used in processing, freezing and canning were imported. On the other hand, a little less than half of the strawberries grown in Canada over the decade as a whole were processed. Data are not available on what proportions of the processed Canadian strawberries were canned and frozen.

1 "Fancy" grade requires a minimum diameter of 5/8 inch. See The Meat and Canned Foods Act and Processed Fruit and Vegetable Regulations, Ottawa.

TABLE 1. TRENDS IN STRAWBERRY PRODUCTION, SALES TO PROCESSORS, EXPORTS AND IMPORTS, IN CANADA OVER THE LAST TWO DECADES

	Average 1935-39	Average 1949-53	Average 1954-58
Production, thousand quarts	24,493	28,119	21,827
Domestic Sales to Processors, Per Cent of Production	20.9	46.0	49.6
Fresh Exports, Per Cent of Production	12.5	14.7	1.4
Fresh Imports, Per Cent of Production	12.5	13.6	53.5

Source: Canada Department of Agriculture, The Current Review of Agricultural Conditions in Canada, annual Situation issues, and D.B.S., Trade of Canada.

Compared with the years immediately prior to World War II there has been an increase in the amount of strawberries processed, both in absolute terms and relative to domestic strawberry production. Comparing the years 1954-58 with the 1949-53 period, there has also been an increase in the total amount of strawberries processed. During the decade, however, there was a decline in the amount of Canadian strawberries processed, but this was more than offset by an increase in imports for processing. Since domestic sales to processors did not decline as fast as production, they represented an increase of from 46.0% to 49.6% in the proportion of strawberries produced.

Almost all of our strawberry exports go to the United States. In recent years, exports of strawberries have fallen off markedly, from 14.7% of the strawberries produced in the 1949-53 period to 1.4% in the 1954-58 period.

Concurrently, there was over the 1949-58 period, a prominent increase in the amount of fresh strawberries imported into Canada, from an equivalent of about 15% of domestic production in 1949-53, to about 54% in 1954-58. The proportion of strawberries for processing that has been imported has increased rapidly in recent years. All of our imports of fresh strawberries come from the United States. During our period, the tariff on these imports has generally stood at 1-3/5¢ per pound (i.e., 2¢ per quart) during our six-week harvest season, and at 10% ad valorem for the rest of the year.[1] In June, 1957, however, regulations providing for a minimum fair market value of 13½¢ per pound (i.e., 16.9¢ per quart) on fresh imports were introduced under the Customs Tariff Act. This set a minimum cost to the importer of 19¢ per quart at the border. This regulation was cancelled in December, 1957.

1 The United States duty on fresh strawberries is ½¢ per lb., June 15 to Sept. 15, and ¾¢ per lb., Sept. 16 to June 14. Canada Department of Agriculture, Canada and the United States Tariffs on Selected Agricultural Products, Ottawa, Dec. 1957, p. 12.

In addition to the increase in fresh imports, there has been a rapid expansion in recent years in the importation of frozen strawberries. Over the three years 1955-57 the fresh equivalent of the imported frozen strawberries amounted to about 19% of the domestic production of fresh strawberries in those three years. About two-thirds of all frozen strawberries for processing in recent years were imported. Approximately three-quarters of our imports of frozen strawberries came from the United States.

In summary, total Canadian production of strawberries declined over the decade of study, but this has been more than offset by decreased exports and increased imports. Frozen strawberry sales have increased conspicuously over the decade.

3. Geographical Pattern of Strawberry Production

Strawberry acreage figures by provinces are available only for census years. In 1956 the biggest acreages in strawberries were in Ontario, Quebec, and British Columbia, although there also were small acreages in strawberries in all of the other provinces. Norfolk County in Ontario and the lower Fraser Valley in British Columbia are important strawberry-growing regions. In 1956 the total Canadian acreage in strawberries was 15,690, of which Ontario accounted for 38.3%, Quebec 32.4%, and British Columbia 14.5%. Together these three provinces accounted for 85.2% of the total acreage in strawberries in 1956. Comparing these figures with 1951 reveals a decline in the total acreage. Although the Ontario and Quebec acreages increased between 1951 and 1956, both in absolute and relative terms, the British Columbia acreage dropped from 4,001 to 2,266, i.e., by about 43%. This was mainly due to the severe frost in British Columbia in 1956.

Area is not as significant a variable in the case of strawberries as the volume of output, however. There is also the danger that the census years may have been unusual. Table 2 summarizes the geographic pattern of trends in strawberry production by provinces over the last two decades. Being averages, these data do not disclose considerable year-to-year variations in production caused mainly by weather. Perhaps the most prominent example of this during the decade was the drastic drop in British Columbia production in 1956. The effects of the severe frost in 1956 were carried forward into the following season.

The economic importance of strawberries to the farmers of the various provinces can be gauged by comparing cash income from strawberries with total cash farm income. From this point of view, strawberries are more important to British Columbia agriculture than in any other province. Strawberries are the main fruit crop in Prince Edward Island, and are also important to agriculture in Nova Scotia and New Brunswick.

Among provinces, British Columbia, Ontario and Quebec usually process the largest quantities of strawberries. The amounts processed

TABLE 2. TRENDS IN STRAWBERRY PRODUCTION, BY PROVINCES OVER THE LAST TWO DECADES

Province	Average 1935-39		Average 1949-53		Average 1954-58	
	(thousand qts.)	(%)	(thousand qts.)	(%)	(thousand qts.)	(%)
Ontario	8,297	32.5	8,578	30.5	7,221	33.1
British Columbia	7,766	30.5	11,277	40.1	6,022	27.6
Quebec	7,012	27.5	6,000	21.3	5,830	26.7
Prince Edward Island	-	-	275	1.0	1,087	5.0
New Brunswick	1,330	5.2	1,032	3.7	905	4.1
Nova Scotia	1,088	4.3	957	3.4	761	3.5
Canada	25,493	100.0	28,119	100.0	21,827	100.0

Source: Canada Department of Agriculture, Current Review of Agricultural Conditions in Canada.

by the provinces vary a lot from year to year, but over the last decade British Columbia processed slightly over half of the total for Canada, Ontario about 30% and Quebec about 17%.

Normal processing dates are as follows: British Columbia, June 5 to July 15; Ontario, June 10 to July 15; Maritimes and Quebec, July 10 to July 31. There are distinct differences among the provinces in the proportions of their crops normally processed. Over the last decade British Columbia processed about 63% of its production, Ontario about 42%, and Prince Edward Island about 41%, and Quebec about 31%.

4. Year-to-year Variations in Supply and Price

It has been stated that the declining Canadian production of strawberries in recent years has been more than offset by decreased exports and increased imports. Mention also was made of year-to-year variations in production due mainly to weather. It might be expected that year-to-year variations in supply (production plus net imports) would be reflected in year-to-year changes in the farm price. An attempt was made, therefore, to compare changes in supply and price by constructing for the 1949-58 period annual indexes of the supply of fresh strawberries, and of the average farm price. These are shown in Table 3. (Since data on imports of frozen strawberries are not available prior to 1955, it was not possible to include their fresh equivalent.)

Both indexes exhibit considerable variations from year to year. Although there seems to be a tendency for supply and price to move in opposite directions, as would be expected, this inverse relationship is not invariable, nor is it close.

TABLE 3. INDEXES OF SUPPLY AND FARM PRICE OF FRESH STRAWBERRIES, CANADA, 1949 TO 1958

(1949 = 100)

Year	Supply Index	Price Index
1949	100	100
1950	101	119
1951	116	105
1952	135	90
1953	126	110
1954	141	119
1955	123	124
1956	130	105
1957	136	105
1958		

Source: Adapted from Canada Department of Agriculture, Current Review of Agricultural Conditions in Canada, and Crop and Seasonal Price Summaries, Fresh Fruit and Vegetables, Part I.

The Dominion Bureau of Statistics has published retail prices for frozen strawberries in recent years. Over the last seven years a definite downward drift in this price is discernible, from about 50.1¢ per 15-ounce package in 1952, to about 42.6¢ in 1958. Retail prices are also available for canned "Choice" strawberries for the last 10 years. These prices fluctuated a little from year to year, but with an upward drift apparent, from about 27.8¢ per 15-ounce can in 1949, to about 32.3¢ in 1958. One can speculate as to the probable reasons for the falling trend in frozen strawberry prices and the rising trend in canned strawberry prices. The volume of frozen strawberries has increased rapidly in recent years. Also, increased freezer spafe in retail outlets and keen competition have exerted a downward pressure on the price of frozen strawberries. In addition, handling and freezing operations have become more mechanized, thereby lowering per unit production costs. In contrast with the expanding supply of frozen strawberries, the pack of canned strawberries is small and stable from year to year.

5. The Seasonal Pattern of Price Variability

Unfortunately, systematic monthly data are not available on the retail prices of fresh strawberries for our 10-year period of study. It is known, however, that the fresh strawberry market in Canada is concentrated in a two-month interval beginning early in June. In the first week or two of this interval, the fresh strawberries are likely to be imports from the United States. It is customary for the retail price to begin from a peak at the beginning of the marketing season and then fall within three weeks to a plateau from which it rises again towards the end of July. This is a customary pattern from which, of

course, there are many deviations.

When D.B.S. retail prices of frozen strawberries were averaged by months over the last seven years, remarkably little seasonal variation was found. The maximum average price of 47.7¢ was for September, and the minimum average price of 46.3¢ was for June. When retail prices of canned strawberries were similarly treated, even less seasonal variability was found. An explanation for the price stability of canned and frozen strawberries lies in the normal pattern of seasonal variation in inventories. These inventories are progressively decreased during the autumn, winter and spring, and are then rebuilt by the new pack during June and July.[1]

6. Estimating the Farm-Retail Spread for Canned Strawberries

Retail prices were available for canned strawberries for the years 1949-57 (basis 15-ounce tin of "Choice" grade). For farm-retail comparability, these retail prices were adjusted to give the retail value equivalent of the canned strawberries derived from one quart of fresh strawberries.[2] By similar treatment, it was possible to derive a comparable processor's selling value. (The strawberry content of the canned strawberries is not, of course, the only cost component in the processor's and retailer's selling prices.) The cost per quart of fresh Canadian strawberries to the processing plants was taken as the basic farm value, but the preceding and current crop prices were weighted to derive calendar-year prices comparable to the retail prices. From these three series estimates could be derived of the farm-retail spread, the processor's spread, the wholesaler-retailer spread, and their shares of the retail value. These calculations are summarized in Table 4. The farm-retail spread on canned strawberries widened moderately over the period as a whole. The farm price rose 3.2¢ per quart over the period. The retail price in the same period rose by 4.4¢ per 15-ounce tin. The widening in the farm-retail spread took place almost entirely in the combined wholesaler-retailer spread (or broker-wholesaler-retailer spread). Sufficient data were not available to enable us to separate the wholesale and retail spreads.

The farmer's share declined slightly and the processor's share increased slightly over the period. The combined wholesaler-retailer share also increased a little. The farmer's share over the period as a whole amounted to about 33.1%; the processor's share amounted to about 43.7%; and the combined wholesaler-retailer share amounted to about 23.2%. When the processor sells through a broker, the brokerage fee amounts to 2½% to 3% of the f.o.b. factory price.

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1 D.B.S., The Fruit and Vegetable Preparations Industry, Annual, and Stocks of Food Commodities in Cold Storage and Other Warehouses, Annual.

2 Using Canada Department of Agriculture conversions of 1 lb. canned = .63 lb. fresh, and 1 qt. fresh = 20 oz.

TABLE 4. SUMMARY OF FARM-PROCESSOR-RETAIL SPREADS ON CANNED STRAWBERRIES, CANADA, 1949 TO 1957[a]

Calendar Year	Retail Price (¢/15-oz. can)	Retail Equivalent Value of 1 qt. Fresh[a] (¢)	Processor Selling Equivalent Value of 1 qt. Fresh (¢)	Farm Value Calendar Year Basis (¢/qt.)	Farm-Retail Spread (¢)	Processor's Share of Retail Value (%)	Farmer's Share of Retail Value (%)
1949	27.8	58.9	47.1	19.3	39.6	47.2	32.8
1950	29.2	61.9	49.9	21.2	40.7	46.4	34.3
1951	29.7	63.0	49.1	23.9	39.1	40.0	37.9
1952	32.1	68.1	44.9	20.8	47.3	35.4	30.5
1953	29.2	61.9	51.9	18.6	43.3	53.8	30.1
1954	32.1	68.1	50.9	20.5	47.6	44.6	30.5
1955	32.3	68.5	49.8	23.0	45.5	39.1	33.6
1956	31.5	66.8	54.6	23.7	43.1	46.3	35.5
1957	32.2	68.3	50.2	22.5	45.8	40.6	32.9

a 1 lb. canned = .63 lb. fresh, and 1 qt. fresh = 20 oz.

Source: Adapted from D.B.S., The Fruit and Vegetable Preparations Industry, Annual.

7. Estimating the Farm-Retail Spread for Frozen Strawberries

Annual retail prices of frozen strawberries for the 15-ounce package are available from mid-1952 on. In order to estimate the farm-retail spread on frozen strawberries for this period, it was necessary to assume that the farm price of strawberries for freezing was the same as for canning. The results of these calculations are shown in Table 5. In marked contrast with canned strawberries the farm-retail spread on frozen strawberries narrowed substantially over the period. Retail prices declined, while farm prices rose. The farmer's share increased from 22.9% in 1952, to 32.2% in 1957.

The downward drift in the price of frozen strawberries, in contrast with the rising retail price for canned strawberries, requires some explanation. The volume of frozen strawberries has been increasing rapidly. Also, increased freezer space in retail outlets and keen competition have exerted downward pressure on the price of frozen strawberries. In addition, handling and freezing operations have become more mechanized, thereby lowering per unit production costs. In contrast with the expanding supply of frozen strawberries, the pack of canned strawberries is small and stable from year to year.

TABLE 5. SUMMARY OF FARM-RETAIL SPREAD ON FROZEN STRAWBERRIES, CANADA, 1952 TO 1957[a]

Calendar Year	Retail Price	Retail Equivalent Value of 1 qt. Fresh[a]	Farm Value Calendar Year Basis	Farm-Retail Spread	Farmer's Share of Retail Value
	(¢/15-oz. pkg.)	(¢)	(¢/qt.)	(¢)	(%)
1952	50.1	78.7	18.0	60.7	22.9
1953	49.7	78.0	18.6	59.4	23.8
1954	48.5	76.1	20.5	55.6	26.9
1955	47.3	74.3	23.0	51.3	31.0
1956	46.8	73.5	23.7	49.8	32.2
1957	44.5	69.9	22.5	47.4	32.2

a 1 lb. frozen = .85 lb. fresh with stems, and 1 qt. fresh = 20 oz.

Source: Adapted from D.B.S., The Fruit and Vegetable Preparations Industry, Annual, and Prices and Price Indexes.