A Statistical Profile of the Pork Supply Chain

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Canada

Profile of the Pork Supply Chain

December 2005

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Foreword

The agriculture sector has and continues to face a number of challenges including long term decline in most commodity prices, increased competition from low cost producing countries, trade barriers, new buyer demands for safety and quality attributes and rapid technological changes. These challenges have forced the sector to compete on new terms and as a result agricultural supply chains are changing to respond to these challenges.

This is the first of a series of reports to be developed by Agriculture and Agri-Food Canada (AAFC) to provide economic snapshots of various agricultural supply chains to help stakeholders manage and adapt to the changing market demands. This report looks at the Canadian pork supply chain. Tables, charts, and figures are used to provide base performance indicators and information concerning the structural changes that are on-going within this supply chain. This information is meant as reference material for Value Chain Roundtables (VCRT) and others interested in the pork supply chain.

This profile shows that the Canadian pork supply chain is a healthy, growing, forward-looking and export-oriented industry. It is one of the furthest advanced industries with respect to the development of supply chain initiatives.

Highlights

- Canada accounts for about 16% of North American pork production and 2.2% of the world's production of pork. Canadian production of pork exceeds domestic consumption.
- Canada is a net exporter of pork and accounts for more than half of North American exports and 21% of world exports. With a stable domestic demand, increases in production have been exported. The industry contributes 10% to total agri-food exports in Canada.
- Most of the hog production occurs in Quebec, Ontario and Manitoba.
- The hog industry accounted for roughly 12% of the total farm cash receipts in Canada in 2004. This is an increase from 8% in 1993. The increase in hog contribution to total farm receipts is even more significant in Manitoba, increasing from 12% in 1993 to 24% in 2004.
- The industry is highly integrated across the Canada–U.S. border and Canadian hog prices closely follow U.S. hog prices and a cycle that is typically four years long.
- Although market hogs in some provinces continue to be sold for slaughter through provincial organizations or marketing boards, hog prices are not set by these organizations. Prices are determined by the market on a dressed carcass basis.
- The Canadian Pork Council formerly launched the Canadian Quality Assurance (CQA) Program in 1998. The program focuses on food safety, product quality and production integrity.

A. The Pork Supply Chain

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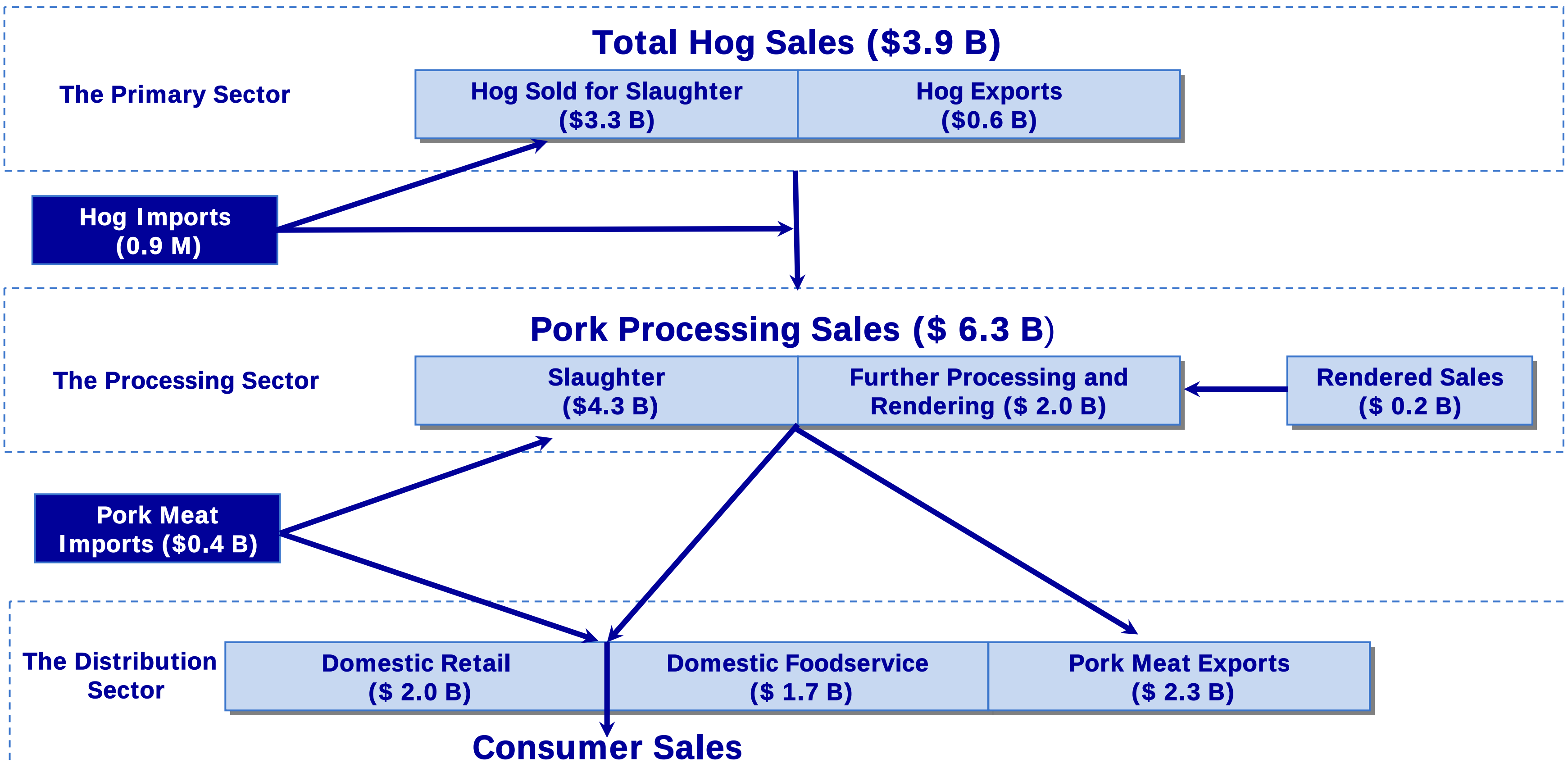
The pork supply chain is complex, integrated and export oriented

The Pork Supply Chain, 2001



Source: Statistics Canada and AAFC Calculations

It consists of hog producers, packers, further processors, retailers and food service. In 2001 it generated $2.9 billion in export sales, and $8.2 billion in domestic consumer sales.

The pork industry has also seen significant structural change over the years…

	1971	2001
Number of Farms	122,479	15,472
Hogs per farm	66	902
Business model	Mixed farms with farrow to finish hog enterprises	Specialized farrowing, feeder or finishing operations
Vertical Integration*	>90% on spot market	90% on contract

Source: Statistics Canada; Census of Agriculture.

*Personal communications with industry experts from AAFC Market and Industry Services Branch (MISB).

There were fewer but larger-sized farms in 2001 compared to 1971. Farms have also become more specialized and vertically integrated.

Pork production increased by almost 60% between 1995 and 2004

Canadian Pork Supply and Disposition, 1980-2004

	1980	1985	1990	1995	2000	2004
			- 000 head -			
Live Hogs						
Marketing	14,215	15,604	15,575	17,519	24,044	31,400
for Slaughter	13,978	14,452	14,683	15,771	19,684	22,889
for Export	238	1,152	892	1,748	4,360	8,511
Weanlings Hogs Export	n/a	n/a	205	651	2,336	5,627
Pork Meat			- tonne -			
Beginning Stocks	12	11	12	15	33	48
Production	1,024	1,088	1,124	1,276	1,640	1,936
Imports	22	21	12	27	66	100
Disappearance	789	749	724	815	880	854
Disposition[1]	269	372	424	504	858	1,231
Waste	82	87	90	102	131	155
Exports	149	251	297	357	656	982
Ending stock	14	9	11	15	33	50
Pork[2]			- 000 tonne -			
Production	1042	1175	1180	1377	1846	2279
Export	156	329	343	459	871	1337

Source: Statistics Canada, CANSIM Table 003-0028 and 003-0037.
AAFC Trade Data Retrieval System, AAFC Aggregation.
[1] This is the sum of exports, waste, manufacturing and ending stock. [2] Hog converted to a meat equivalent basis

The pork supply chain produced over 2 million tonnes of pork in 2004. Almost 60% of the total pork supply is exported, 37% is consumed domestically and another 3% goes into manufacturing, ending stock or waste.

B. Primary Production

Almost three-quarters of the total hogs are located in Quebec, Ontario and Manitoba

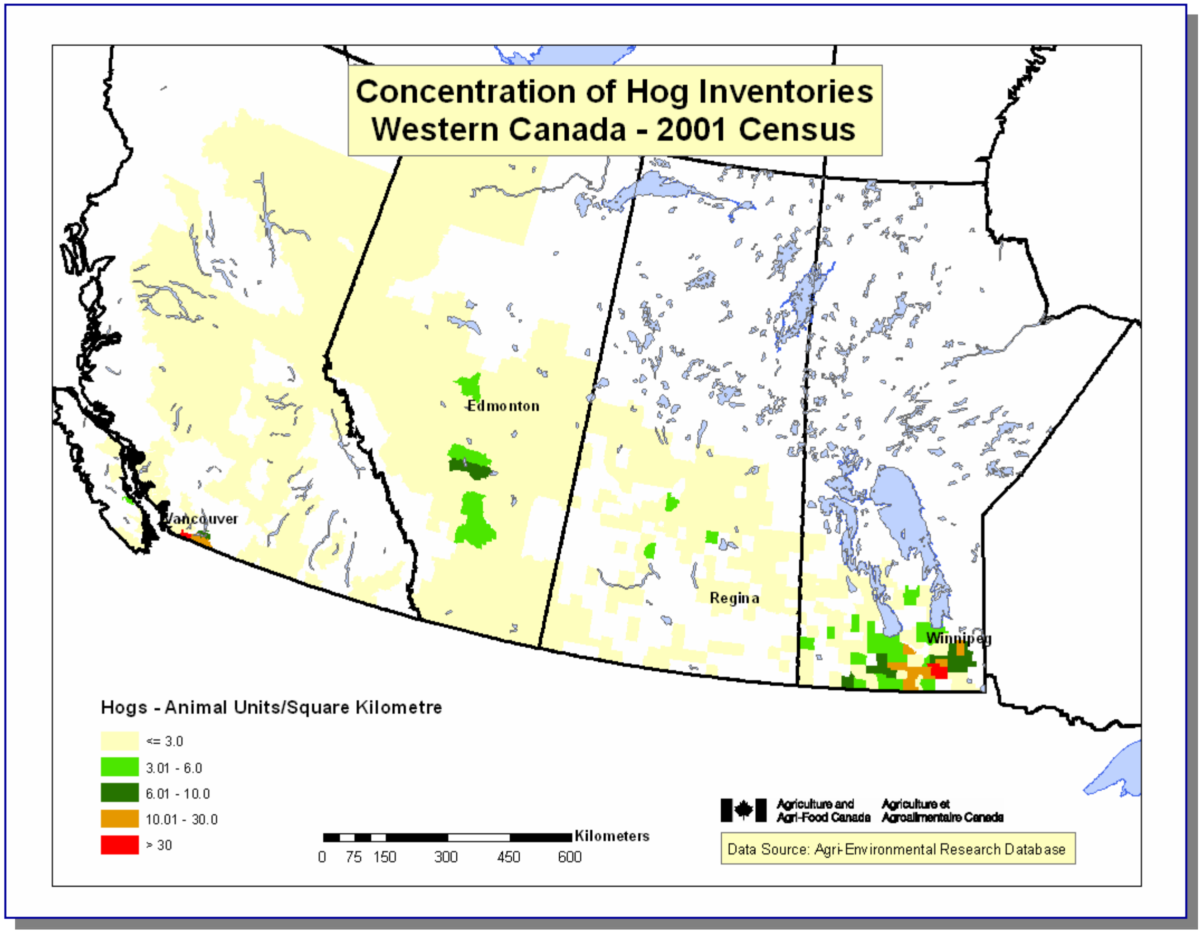
Hog Inventories, Canada, October, 2005

Provinces	B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.B.	N.S.	P.E.I.	N.L.	Canada
						- '000 head -					
Breeding Stock	21.3	222.9	133.2	372.2	442.7	416.6	12.3	8.8	11.8	0.3	1,642.1
Sows and Bred Gilts	20.6	216.3	128.9	367	432.1	410.8	12	8.4	11.4	0.3	1,607.8
Boars, 6 months plus	0.7	6.6	4.3	5.2	10.6	5.8	0.3	0.4	0.4	0	34.3
All Other Pigs	145.7	1817.1	1245.8	2537.8	3,277.3	3,938.4	99.7	92.8	111.2	2.1	13,267.9
Under 20 kg	45.8	598.5	414.5	921	1,150.8	1,297.5	40.5	30	33.3	0.7	4,532.6
20 - 60 kg	51	620	416.3	901.7	1,200.8	1,301.8	31	32.7	40.7	0.7	4,596.7
Over 60 kg	48.9	598.6	415	715.1	925.7	1,339.1	28.2	30.1	37.2	0.7	4,138.6
Total Inventory	167	2,040	1,379	2,910	3,720	4,355	112	101.6	123	2.4	14,910

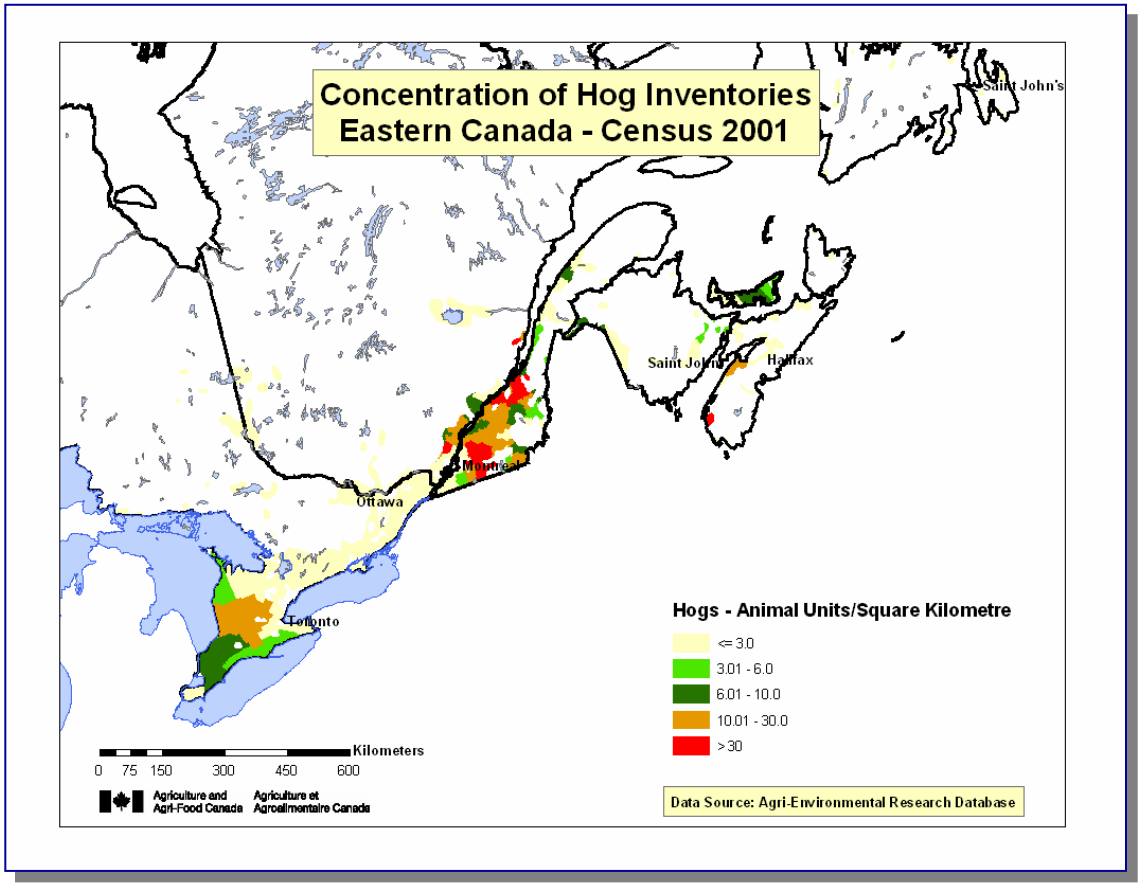
Source: Statistics Canada, Hog Statistics, Catalogue No 23-010-X1E 2005, Vol. 4, No. 4.

In 2005, there were about 15 million head of hogs in Canada, 11% of which were breeding stock.

In Western Canada, most of the hogs are located in Manitoba with a few large farms in British Columbia

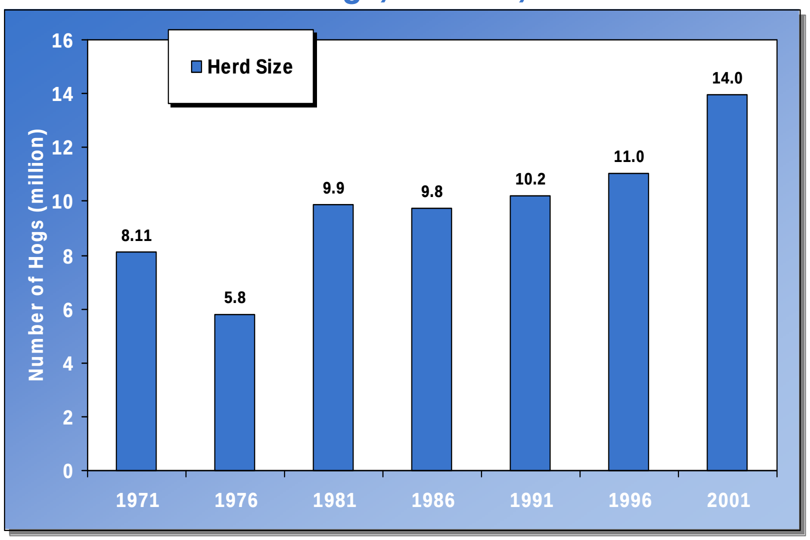


In Eastern Canada, hogs are concentrated in Quebec and Ontario



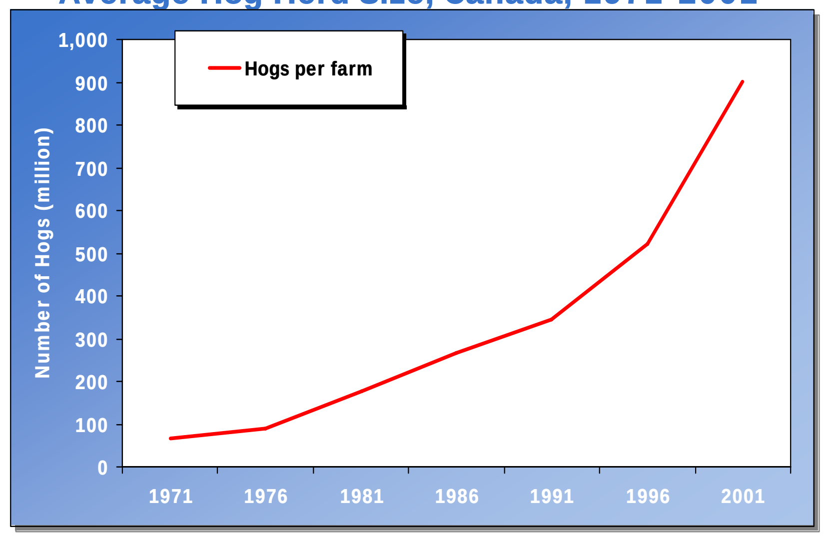
The total number of hogs, as well as the average hog herd size in Canada has been growing considerably over time

Number of Hogs, Canada, 1971-2001



Source: Statistics Canada, Census of Agriculture

Average Hog Herd Size, Canada, 1971-2001

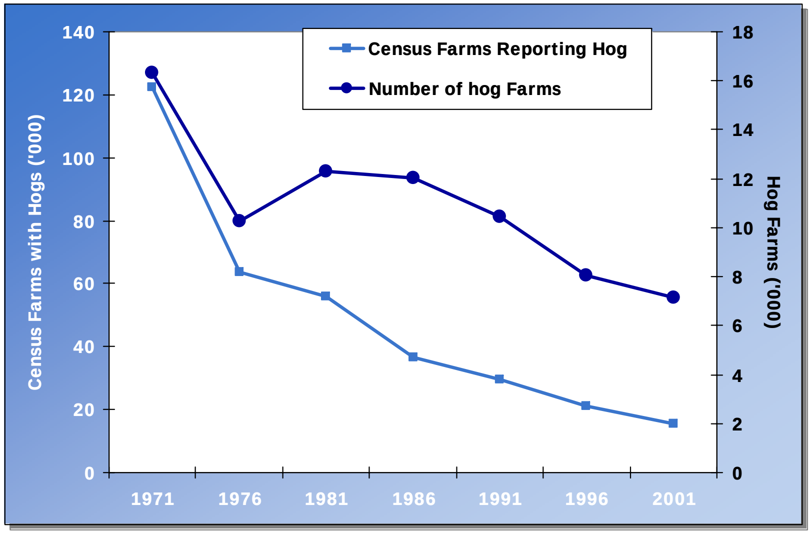


Source: Statistics Canada, Census of Agriculture

Total hog numbers have increased by almost 6 million over the past 30 years. This increase in hog population for the most part reflects larger herd sizes. The average herd size has increased by about 13 fold with about 70% of this increase occurring just in the last 10 years.

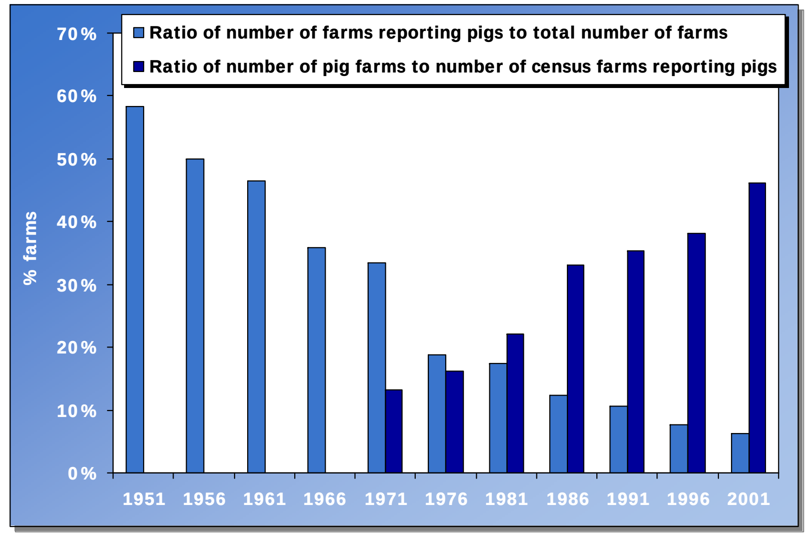
The total number of hog operations has sharply decreased, with less than half the number being reported in 2001 compared to 1971, but with increased specialization

Number of Hog Operations, Canada, 1971-2001



Source: Statistics Canada, Census of Agriculture

Number of Farms with Pigs Specializing in Hog Operations, Canada, 1971-2001



Source: Statistics Canada, Census of Agriculture

More farms are specializing in hog production as opposed to just having a few pigs as a side operation. Hog operations are farms that earn the majority of their total revenue from hog production. Hog operations accounted for less than 15% of total farms with pigs in 1971 but accounted for more than 45% in 2001.

Hog farms in Canada vary in size from less than 20 hogs to up to 20,000 and roughly half of all farms have less than 250 hogs

Distribution of Hog Operations by Herd size and by Province, 2001

Province	Total number of hog farms reporting	< 20 hogs	20 – 249 hogs	250 – 999 hogs	1,000 hogs and over
NL	31	21	7	2	1
P.E.I.	193	33	68	48	44
N.S.	196	102	25	28	41
N.B.	195	78	46	34	37
Que.	2,743	207	216	846	1,474
Ont.	4,972	1,139	1,495	1,266	1,072
Man.	1,668	289	403	487	489
Sask.	1,677	836	497	194	150
Alta.	2,677	1,016	714	432	515
B.C.	1,120	959	102	17	42
Canada	**15,472**	**4,680**	**3,573**	**3,354**	**3,865**

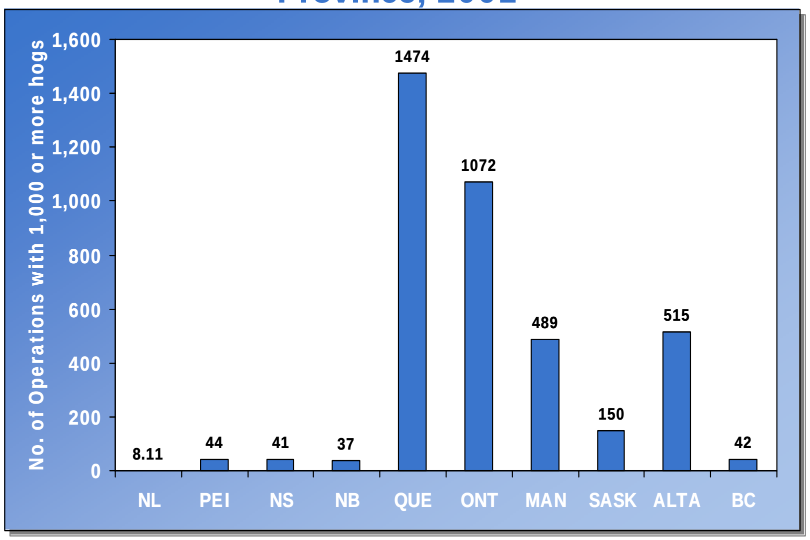
Source: Statistics Canada, Census of Agriculture, 2001.

[1] These are farms that have 51% or more of its total potential receipts accounted for by hogs.

Hog operations with less than 20 hogs make up 30% of all hog farms across Canada. This percentage rises to 85% in British Columbia and 50% in Saskatchewan.

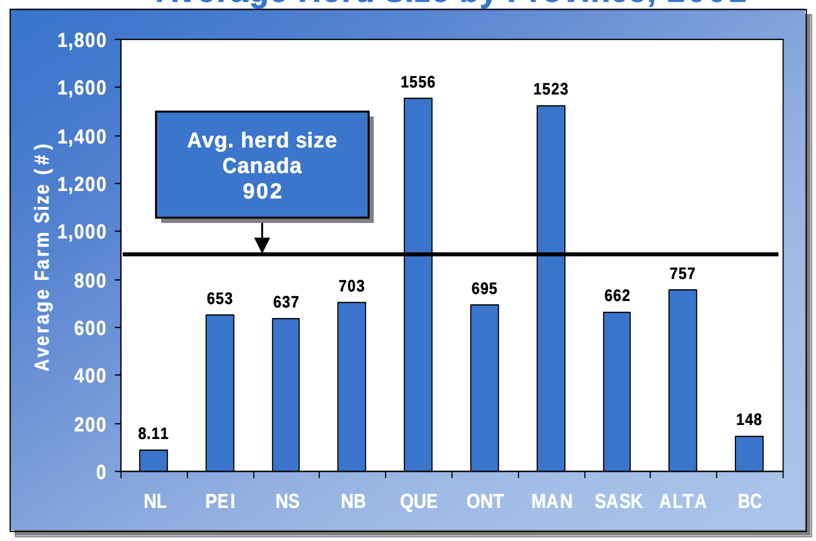
Two-thirds of all large hog farms (1,000 animals or more) are located in Quebec and Ontario. Only Quebec and Manitoba have average herd sizes higher than the national average

Distribution of Large Hog Operations by Province, 2001



Source: Statistics Canada, Census of Agriculture, 2001.

Average Herd Size by Province, 2001



Source: Statistics Canada, Census of Agriculture, 2001.

Ontario has many smaller-sized hog farms relative to Quebec and Manitoba. This explains the relatively smaller average herd size in Ontario than Quebec and Manitoba.

Slightly more than half of all hog operations are specialized in production as either farrowing or finishing operations

Distribution of Hog Farms by Type[1], 2001

Province	Farrowing		Finishing		Farrow to Finish	
	Number of farms	Average herd size	Number of farms	Average Herd	Number of Farms	Average herd
NL	3	43	2	n/a	5	n/a
P.E.I.	49	233	45	n/a	66	n/a
N.S.	14	569	26	1,288	54	1,536
N.B.	23	785	38	1,023	56	1,423
Que.	491	922	1,077	1,619	968	2,138
Ont.	633	640	1,505	810	1,695	1,077
Man.	262	1,521	661	1,190	456	2,968
Sask.	128	272	259	414	454	2,120
Alta.	284	371	466	655	911	1,768
B.C.	53	459	38	629	70	1,610
Canada	**1,940**	**752**	**4,117**	**1,034**	**4,735**	**1,710**

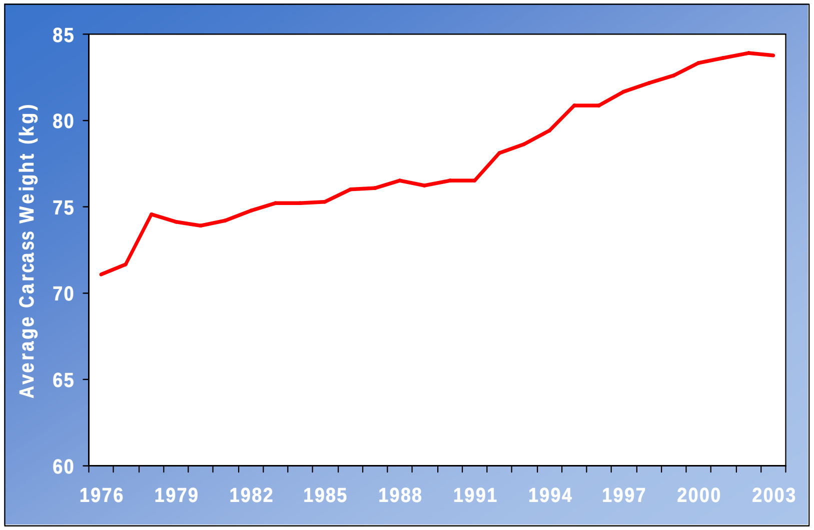
Source: Statistics Canada, Census of Agriculture, 2001

[1] Excludes farms with less than 20 hogs.

Specialization is more predominant in Quebec, Ontario and Manitoba. In general, the average herd size is smaller in finishing operations than in farrow to finish operations. Farrow to finish operations include those farms that operate with separate barns for farrowing and finishing

Genetic improvements in Canada have led to increases in hog productivity over time

Average Hog Carcass Weight, Canada, 1976-2003[1]



Source: Canadian Centre for Swine Improvement (CCSI)
Note: [1]Average cold trimmed weight. Does not include edible offal and fats

Change in Productivity in Hog Production from Genetic Improvements from 1997 to 2003

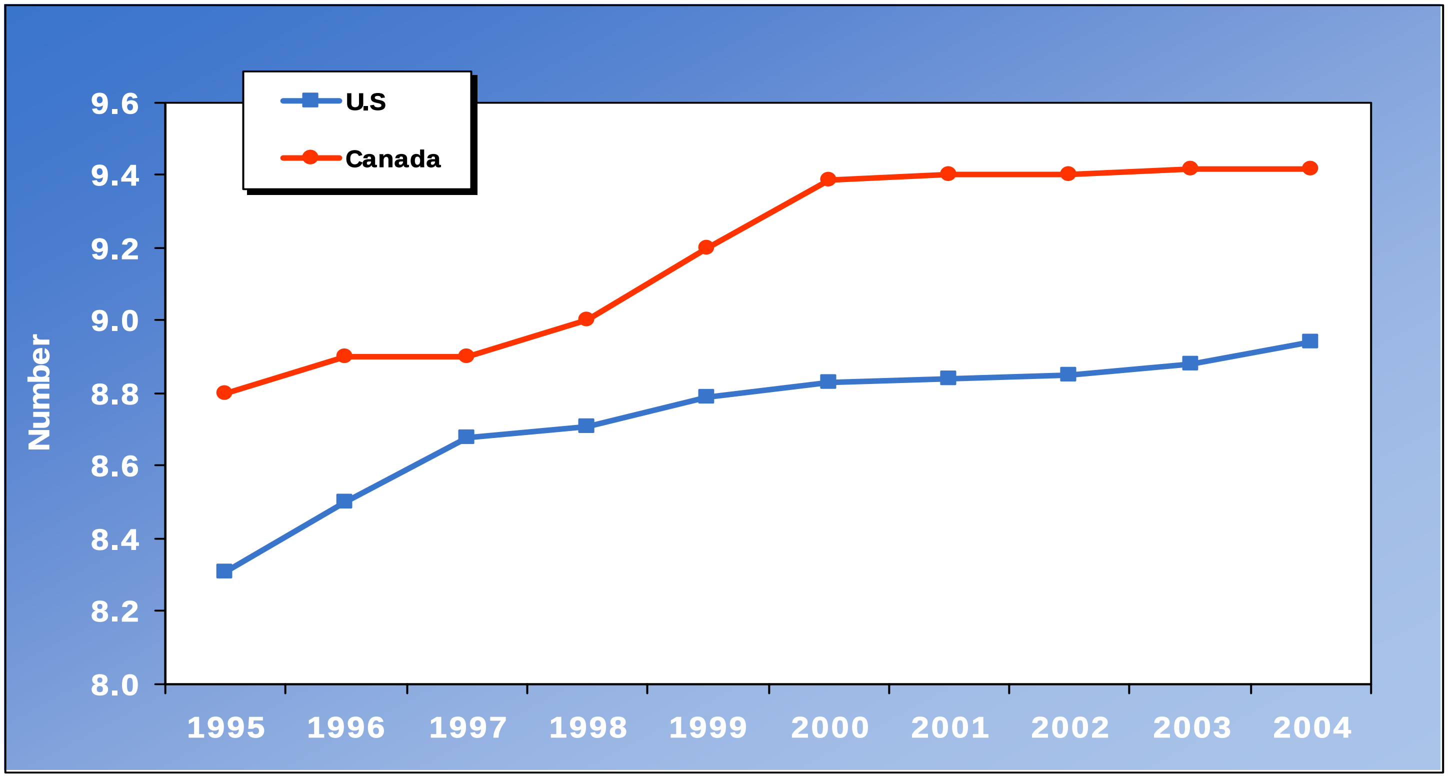
	Commercial Sows	Market Hogs
Litter size	1.2	0.5
Feed Conversion (kg grain per kg gain)	-0.116	-0.131
Days to Market	-8.3	-8.9
Lean Yield	0.61	0.84

Source: Canadian Centre for Swine Improvement (CCSI)

The average hog carcass weight has increased from 74 kg in 1980 to 84 kg in 2003. Litter size has increased by 5% over the past 6 years. It takes 9 less days to raise a hog to a marketing age, and 13% less the grain to put a kilogram of gain on the hogs today than six years ago.

Canadian breeding herds are far more efficient than U.S. herds as measured by pigs per litter

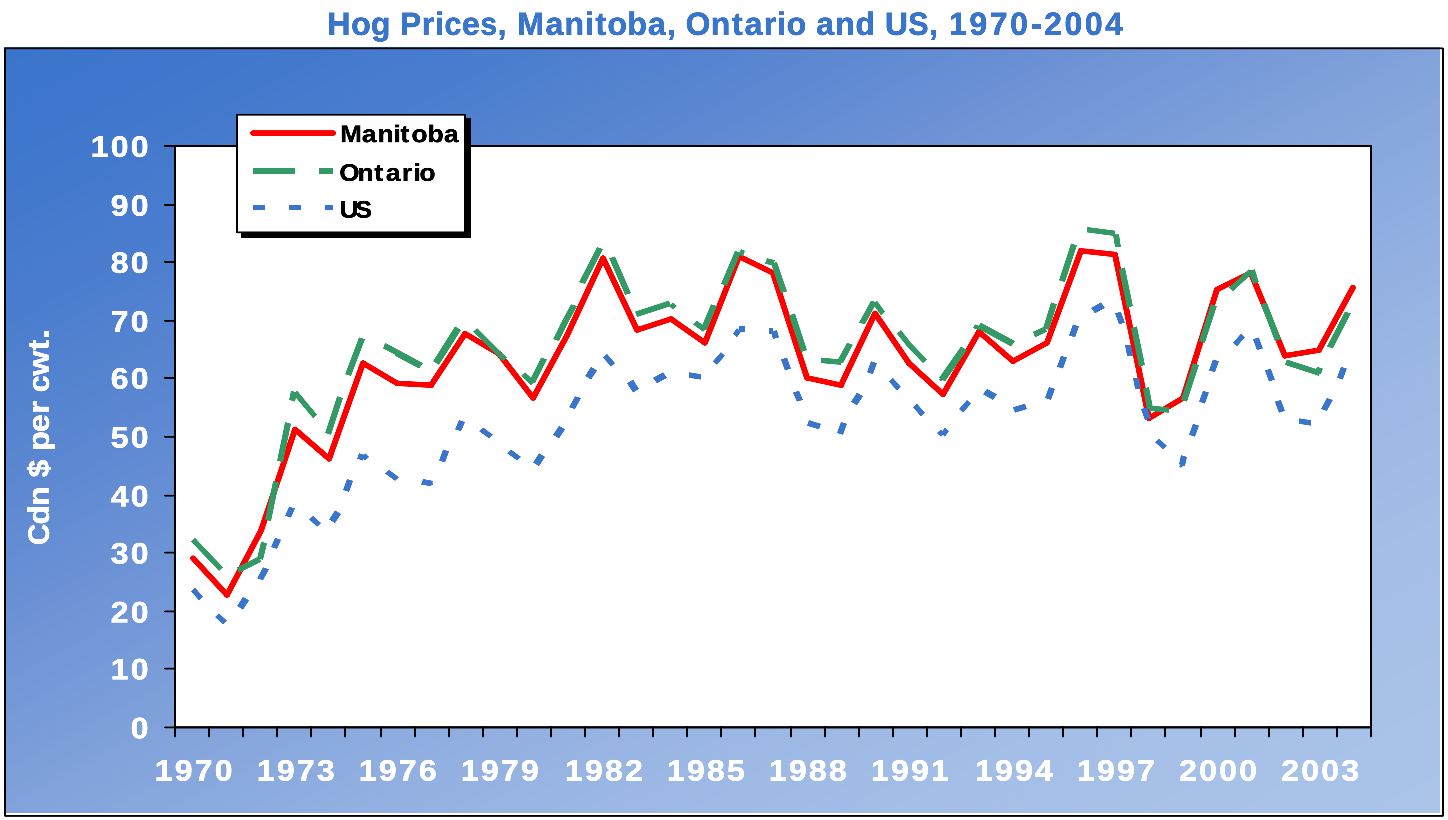
Pigs Per Litter, Canada and U.S., 1995-2004



Source: Statistics Canada, Hog Statistics, Catalogue No. 23-010-XIE
USDA, National Agricultural Statistics Services, Quick Stats: Agricultural Statistics Data base

The number of pigs per litter continues to increase in both Canada and U.S. However, it has been consistently higher in Canada than in the U.S.

Canadian hog prices tend to closely follow U.S. price movements over time



Source: Statistics Canada, Hog Statistics Catalogue No. 23-010-K1E.
USDA, U.S. Historic Hog Prices, http://www.usda.gov/nass/

The Canadian hog industry is part of the larger North American hog industry. Hog prices tend to follow a hog price cycle, which is typically four years in length.

The Canadian hog industry is an open market system. Producers can either sell their hogs directly to processors or through provincial hog marketing organizations.

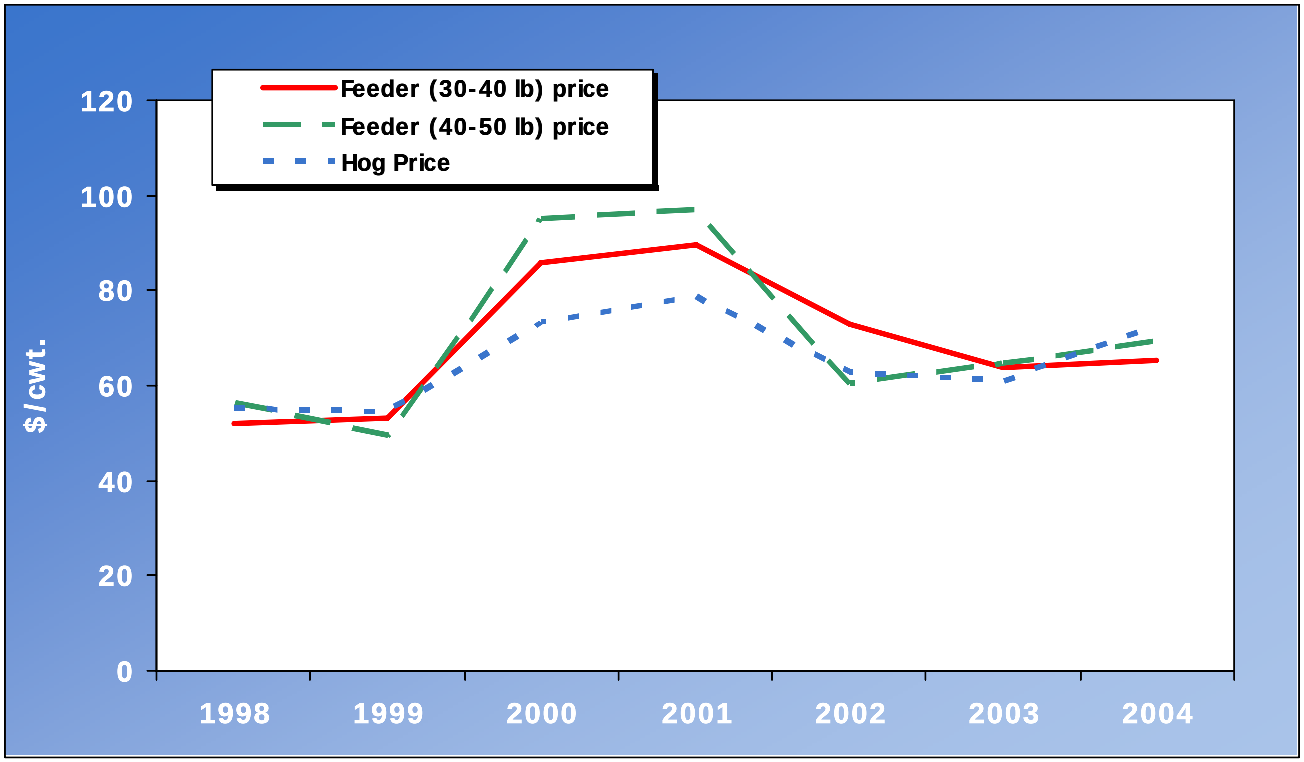
Marketing Boards and Agencies

- **British Columbia Hog Marketing Commission**
- **Saskatchewan Pork**
- **Saskatchewan Pork International**
- **Alberta Pork**
- **Western Hog Exchange**
- **Manitoba Pork Council**
- **Manitoba Pork Marketing**
- **Ontario Pork**
- **Fédération des Producteurs de Porcs du Québec (FPPQ)**
- **New Brunswick Hog Marketing Board**
- **PEI Hog Commodity Marketing Board**
- **Pork Nova Scotia**

Market hogs are sold for slaughter through provincial organizations or marketing boards. About 90% of hogs are sold using marketing contracts and 10% through the spot market. Canada has a grading system whereby hogs are categorized according to weight, loin eye depth and thickness of back fat to achieve an index (100 index). The index is applied to the pool price resulting in a gross value for each hog.

Feeder hog prices fluctuate around market hog prices but were consistently higher than market hog prices in 2000s

Average Feeder and Market Hog Prices, Ontario, 1998-2004

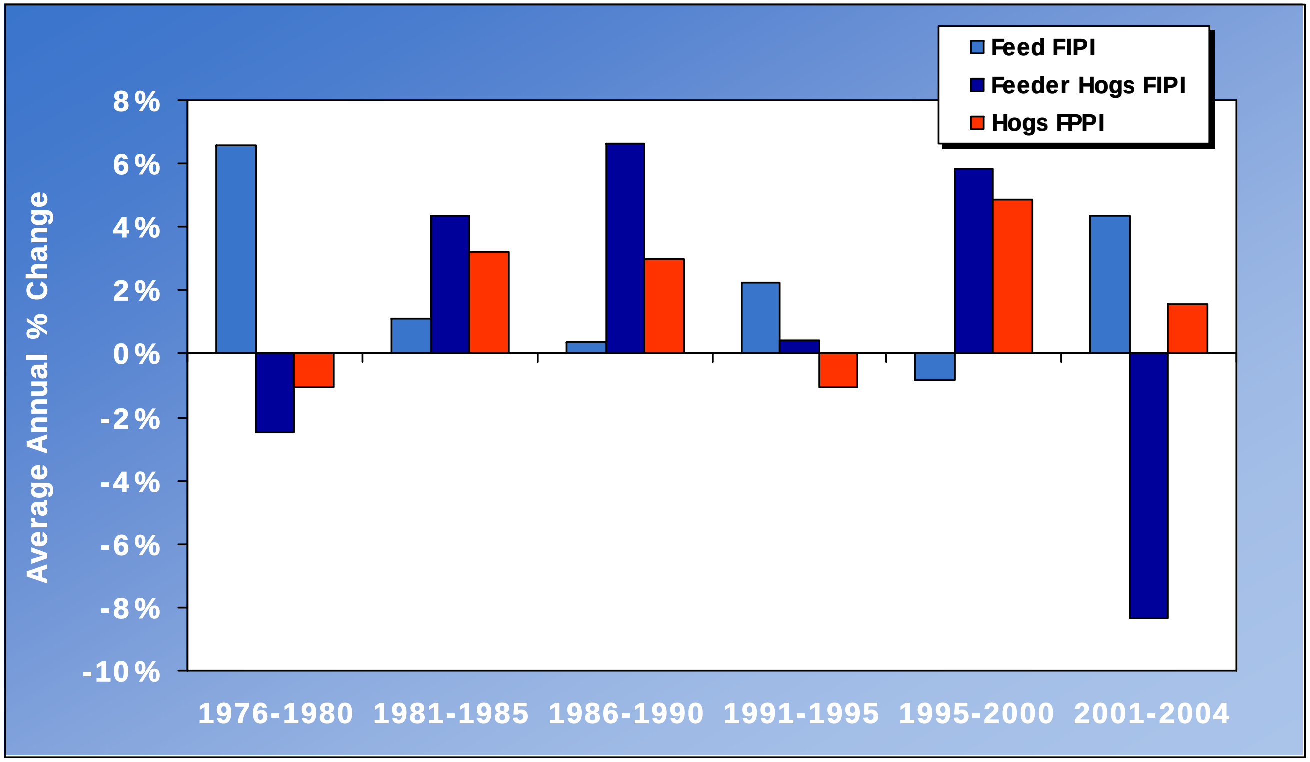


Sources: AISD, MISB, AAFC, Annual Livestock and Meat Report.
Statistics Canada, Hog Statistics 2004, vol. 3, no. 3, Catalogue No. 23-010-XIE

The price fluctuations around the market hog prices are the result of producers' perceptions about the future profitability of hog production.

Rising feed costs relative to falling market hog prices in 2001 – 2004, have decreased demand for feeder hogs, resulting in lower feeder hog prices

Hog and Feed Prices, Canada, 1976-2004



Source: Statistics Canada, Farm Input Price Index (FIPI) and Farm Product Price Index (FPPI)

Producers' perceptions about profitability also reflect market hog price movements relative to feed cost movements.

Feed costs are the largest expense category followed by live animal purchases in a typical hog operation

Average Cost of Production for Hog Farms, Quebec and Manitoba, 2003

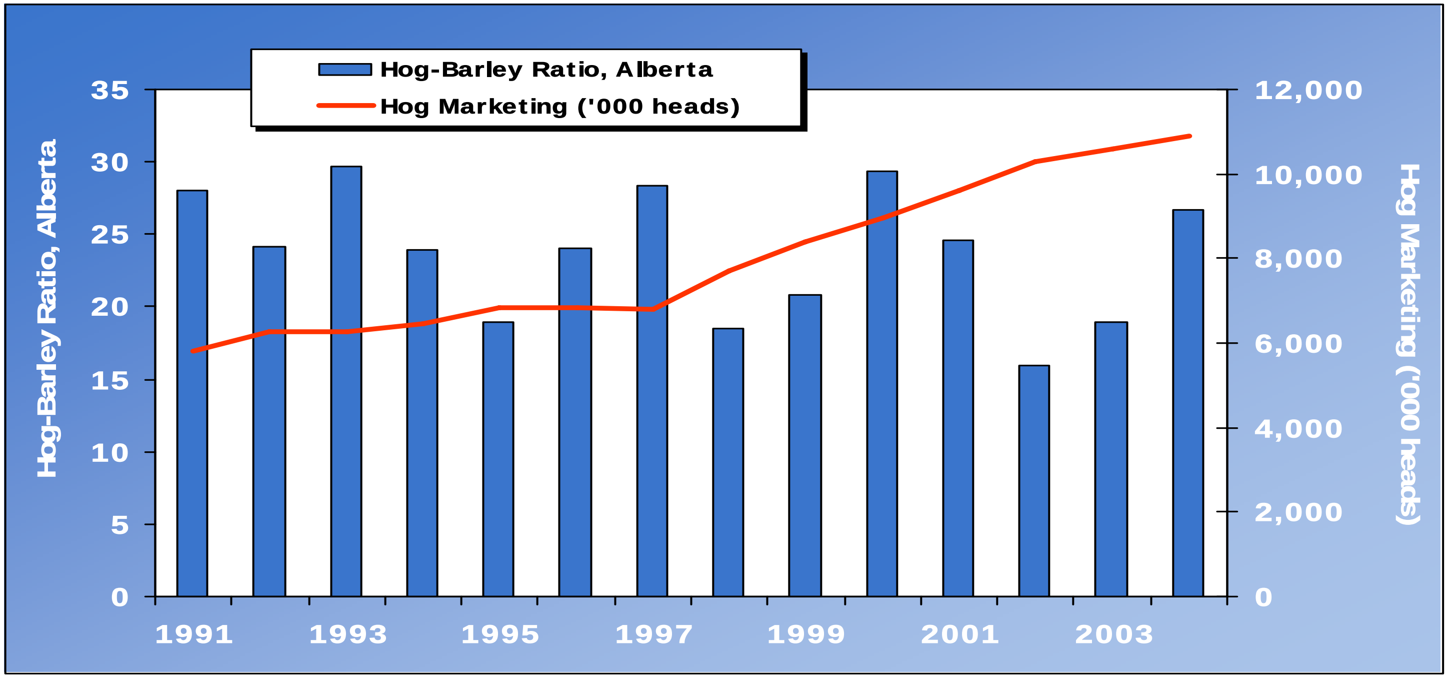
Operating Expenses	Quebec		Manitoba	
	Cost	% of total	Cost	% of total
R230 Fertilizer and Lime	4,436	0.6%	26,014	2.1%
R235 Pesticides	1,282	0.2%	19,911	1.6%
R240 Seed and Plants	4,189	0.5%	11,271	0.9%
R2105 Total Crop Expenses	**10,309**	**1.3%**	**57,262**	**4.6%**
R245 Cattle Purchases	3.087	0.4%	2,787	0.2%
R246 Swine Purchases	171,953	21.7%	288,990	23.3%
R247 Poultry and Egg Purchases	6,168	0.8%	3,836	0.3%
R250 Feed Supplements, Straw and Bedding	317,012	40.1%	496,824	40.0%
R255 Veterinary Fees, Medicine and Breeding Fees	20,480	2.6%	30,556	2.5%
R2110 Total Livestock Expense	**518,792**	**65.6%**	**823,320**	**66.2%**
R270 Small Tools	256	0.0%	488	0.0%
R2111 Net Fuel Expenses, Machinery, Truck, Auto	8,268	1.0%	24,067	1.9%
R2112 Repairs, Licenses and Insurance	17,872	2.3%	29,265	2.4%
R2120 Total Machinery Expenses	**26,396**	**3.3%**	**53,820**	**4.3%**
R2121 Salaries (including CPP, QPP, EI)	56,658	7.2%	78,471	6.3%
R2122 Rent	8,492	1.1%	13,502	1.1%
R275 Insurance	11,210	1.4%	18,830	1.5%
R2123 Net Electricity (Farm Share)	10,388	1.3%	18,872	1.5%
R295 Heating Fuel (Farm Share)	9,000	1.1%	8,295	0.7%
R300 Custom Work and Machine Rental	30,147	3.8%	38,604	3.1%
R2126 Net Interest Expenses	35,932	4.5%	54,398	4.4%
R2129 Marketing Expenses	17,145	2.2%	18,529	1.5%
R2131 Miscellaneous Farm Expenses	36,908	4.7%	21,563	1.7%
R2135 Total General Expenses	**235,188**	**29.7%**	**308,497**	**24.8%**
R2140 Total Operating Expenses	**790,685**	**100.0%**	**1,242,898**	**100.0%**

Source: Statistics Canada, Taxfiler

On average, feed costs represent 40% of the total cost of production, and live animal purchases another 20-25%.

Historically, the hog-barley ratio in Western Canada has been an indicator of the profitability of raising live hogs. When hog prices increase relative to feed barley prices, hog production becomes more profitable

The Hog-Barley Ratio[1] and Hog Marketings, 1991-2004



Source: AISD, MISB, AAFC, Annual Livestock and Meat Report, 2004

[1]The hog barley ratio is the number of bushels of No.1 Feed Barley equal in value to 100 lb. of an Index 100 live hog. The hog price is the weighted average price for Alberta. The Lethbridge barley price is used for 1996-2002 and the Winnipeg barley price for 1991-1995

However, this relationship has been losing strength since the late 1990s partly because of policy changes such as the WGTA, and an increase in the number and capacity of hog slaughter plants. The sharp drop in the ratio in 2002 reflects the resulting relative scarcity of barley for feed as a result of the prairie drought.

In 2004, hog production accounted for roughly 12% of all farm cash receipts in Canada

The Hog Industry's Share of Farm Cash Receipts, 2004

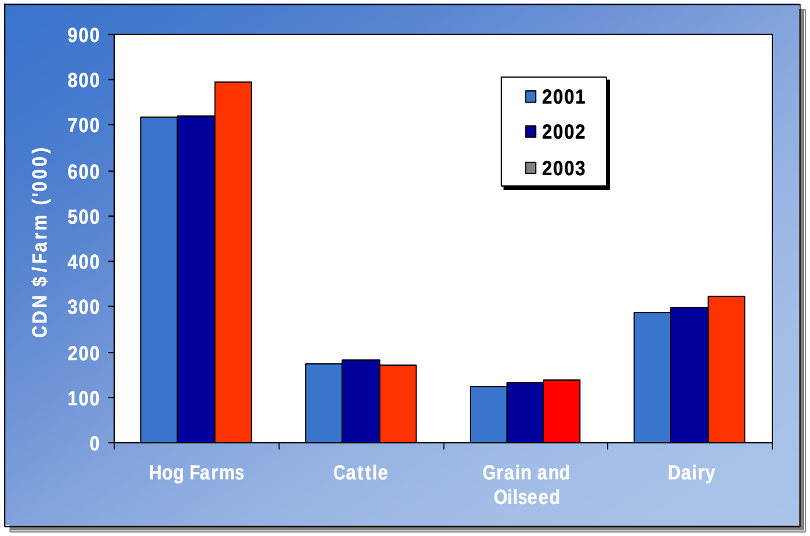
Provinces	B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.B.	N.S.	P.E.I.	NL	Canada
						- $ Million -					
Hog Receipts	47	613	329	937	1,051	1.191	29	31	34	1	4,263
Other Livestock Receipts	964	3,380	1,127	731	3.302	2,802	174	258	89	67	12,894
Total Livestock Receipts	1,011	3,993	1,456	1,668	4,593	3,993	203	289	123	68	17,157
Total Crop Receipts	1,204	2,617	3,298	1,780	3,607	1,479	180	137	186	17	14,506
Market Receipts (livestock & crops)	2,215	6,610	4,754	3,448	7,960	5,473	383	426	309	85	31,663
Total Farm Cash Receipts	2,403	8,043	5,944	3,907	8,634	6,307	4191	451	348	86	36,543
Hog as % of Livestock receipts	4.7%	15.4%	22.6%	56.2%	24.1%	29.8%	14.4%	10.8%	27.6%	1.6%	24.8%
Hogs as % of Market Receipts	2.1%	9.3%	6.9%	27.2%	13.2%	21.8%	7.6%	7.3%	11.0%	1.3%	13.5%
Hog as % of Total Cash Receipts	**2.0%**	**7.6%**	**5.5%**	**24.0%**	**12.2%**	**18.9%**	**7.0%**	**6.9%**	**9.7%**	**1.3%**	**11.7%**

Source: Statistics Canada, Farm Cash Receipts, Cansim Table 002-001.

In Manitoba and Quebec, this percentage was closer to 25%. In 2004, a total of $4.3 billion in farm cash receipts was generated from hog production in Canada.

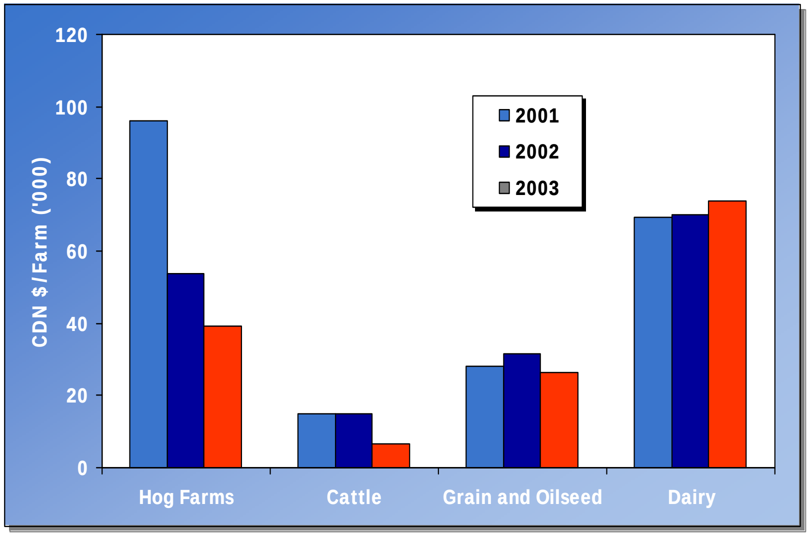
Hog farms reported one of the highest average net incomes across all farm types in 2003

Average Farm Revenue by Farm Type, 2001-2003



Source: Statistics Canada, Farm Financial Survey.

Average Net Cash Income by Farm Type, 2001-2003



Source: Statistics Canada, Farm Financial Survey.

Net income for hog farms was significantly higher than average in 2001. The substantial rise in farm revenues in 2001 was due to strong hog prices as well as increased quantities sold.

As revenue class gets larger, program payments, on average, make-up a decreasing proportion of the net income of hog farms

Income Statements for the Average Hog Farm by Revenue Class, 2003

	Less than $100,000	$100,000 – $499,999	$500,000 – $999,999	Greater than $1,000,000	All Hog Farms
Income Statement					
Farm Sales, (000$)	47	237	608	2,294	533
Program Payments (000$)	3	27	58	132	41
Total Revenue (000$)	49	264	666	2,426	574
Total Expenses (000$)	52	242	610	2,244	531
Net Income, (000$)	-3	22	56	182	44
Market Income (000$)	-6	-5	-3	50	3
Margin[1]	-28%	10%	8%	9%	1%
Non-farm Income (000$)	27	17	12	52	23
NISA Balance (000$)	4	20	34	178	40
Number of Sows per farm	12	87	215	567	157
Number of Pigs per farm	123	718	1,882	5,272	1,398

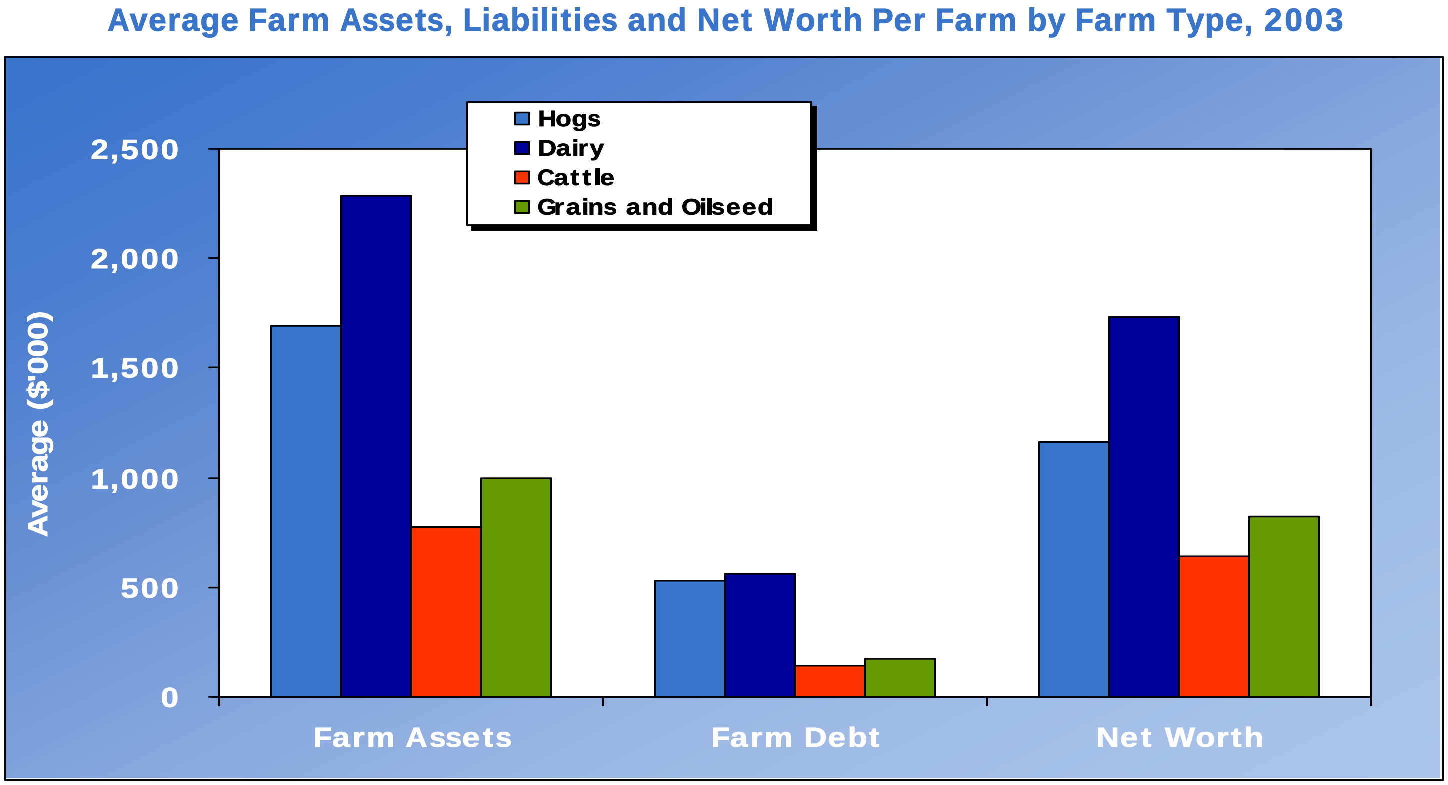
Source: Statistics Canada, 2004 Farm Financial Survey

[1]Gross margin ratio is calculated as net income divided by total revenue

*Due to rounding numbers may not add up correctly

Program payments are quite important for hog farms in recent years. It is particularly used to offset losses for farms with less than $100,000 in sales. Hog farms in the $100,000 – $499,999 revenue class have the highest average gross margin ratio, at 10%. The gross margin ratio is a measure of the income return associated with each dollar of revenue received by the producer.

Hog operations tend to have high asset value and net worth compared to that for other farm types



Source: Statistics Canada, 2004 Farm Financial Survey.

The high average asset value reflects the recent restructuring within the industry to larger-sized enterprises.

Larger hog farms tend to have a relatively high asset value and net worth but equity ratios do not vary much among different sizes of hog operations

Balance Sheets for the Average Hog Farm by Revenue Class, 2003

	Less than $100,000	$100,000 – $499,999	$500,000 – $999,999	Greater than $1,000,000	All Hog Farms
Balance Sheet					
Current Assets (000$)	21	103	256	876	215
Long Term Assets (000$)	439	872	1505	5307	1477
Total Assets (000$)	**460**	**976**	**1762**	**6183**	**1691**
Current Debt (000$)	9	44	114	337	88
Long Term Debt (000$)	90	309	550	1327	439
Total Debt (000$)	**99**	**353**	**664**	**1664**	**526**
Net Worth (000$)	361	623	1098	4519	1165
Working Capital Ratio[1]	**1.3**	**4.0**	**7.6**	**7.1**	**4.9**
Equity	**77.4%**	**60.1%**	**55.2%**	**63.3%**	**63.4%**

Source: Statistics Canada, 2004 Farm Financial Survey

[1] This is a ratio of current assets to current debt.

*Due to rounding numbers may not add up correctly

In 2003, hog farms with sales over $1 million reported an average net worth that exceeded $4.5 million with total assets just over $6 million. Farms in the $500,000-$999,999 sales range had, on average, the lowest equity.

C. Processing

Most hogs for domestic slaughter are killed in packing plants in their province of origin

Interprovincial Shipments of Live Hogs, 2004

Province of Origin	B.C.	Alta.	Sask.	Man.	Ont.	Que.	Maritimes	Total Imports
Province of Slaughter					Head ('000)			
B.C.	-	270.2	0.0	0	0.0	0.0	0.0	270.2
Alta.	0.0	-	0.0	0	0.0	0.0	0.0	0.0
Sask.	2.5	14.8	-	0.1	0.0	0.0	0.0	17.4
Man.	0.0	174.7	214.7	-	0.0	0.0	0.0	389.4
Ont.	0.0	0.0	0.0	0	-	9.6	0.0	9.6
Que.	0.0	0.0	0.0	0	6829	-	81.3	764.2
Maritimes	0.0	0.0	0.0	0	0.0	0.0	-	0.0
Total Exports	2.5	459.7	214.7	0.1	682.9	9.6	81.3	1,450.8

Source: AAFC, AID, MISB, Annual Livestock and Meat Report 2004.

Interprovincial shipments that do occur tend to be between neighbouring provinces.

Federally inspected hog slaughter has increased by 40% since the late 1990s and accounts for about 95% of all hog slaughter in Canada

Number of Hogs Slaughtered in Federally and Provincially Inspected Establishments ('000 head), 1998-2004

Provinces	B.C.	Alta.	Sask.	Man.	Ont.	Que.	Maritimes	Canada
				Federally Inspected Plants				
1998	198	1,414	1,014	2,692	2,710	7,064	479	15,572
1999	208	1,952	983	2,937	3,508	7,454	516	17,558
2000	230	1,908	900	3,802	3,463	7,587	486	18,376
2001	328	2,043	1,008	4,026	3,675	7,822	514	19,415
2002	379	2,408	1,096	4,282	4,009	8,105	523	20,803
2003	381	2,664	1,110	4,211	4,197	8,120	503	21,185
2004	381	2,885	1,110	4,221	4,183	8,477	488	21,744
				Provincially Inspected Plants				
1998	100	182	21	128	648	71	22	1,173
1999	111	184	40	136	649	71	22	1,213
2000	116	183	22	122	577	66	23	1,109
2001	123	175	33	122	582	70	22	1,127
2002	125	179	38	139	612	62	21	1,176
2003	131	154	41	141	561	54	20	1,103
2004	141	124	40	135	481	17	19	957

Source: Canadian Food Inspection Agency and Provincial Governments, AISD, MISB, AAFC; Annual Livestock and Meat Report

The increase in federally-inspected hog slaughter can be attributed to the opening of new state-of-the-art facilities and plant capacity increases in existing federally inspected facilities. Because pork slaughtered in provincially inspected plants cannot be exported, there has been very little growth in provincially-inspected slaughter.

Location of Major Federally Inspected Hog Slaughter Plants, 2004

Name	Location
British Columbia / Alberta	
Lawrence Packers Limited	Peace River, British Columbia
Britco Expert Packers Ltd.	Langley, British Columbia
Maple Leaf	Lethbridge, Alberta
J & M Meats International Ltd.	Warburg, Alberta
Lacombe Meat Research Centre	Lacombe, Alberta
Ouellette Packers 2000 L & D	Sturgeon County, Alberta
Olymel S.E.C.	Red Deer Alberta
Trochu Meat Processors Ltd.	Trochu, Alberta
Saskatoon / Manitoba	
Harvest Meats Co. Ltd.	Yorkton, Saskatchewan
Mitchell's Gourmet Foods	Saskatoon, Saskatchewan
Worldwide Pork Company Limited	Moose Jaw, Saskatchewan
Maple Leaf Meats	Brandon, Manitoba
Maple Leaf Meats	Winnipeg, Manitoba
Best Brand Meats Ltd. (Jack Forgan Meat Ltd.)	Winnipeg, Manitoba
Winkler Wholesale Meats Ltd.	Winkler, Manitoba
Springhill Farms	Neepawa, Manitoba
Ontario	
Maple Leaf Food Inc.	Burlington
Canada Custom Slaughtering Inc.	Toronto
Toronto Abattoirs Limited	Toronto
University of Guelph	Guelph
Conestoga Meat Packers Ltd.	Breslau
West Perth Packers Ltd.	Mitchell

Name	Location
Quebec	
L.G. Hébert et Fils Ltée	Ste-Hélène de Bagot
Les Viandes Dubreton Inc.	Notre Dame du Lac
9075-6347 Québec Inc. (Les Viandes Lorraine)	Lorrainville
Atraham Transformation Inc.	Yamachiche Cte Maskinonge
Agromex Inc. (Division des Viandes)	St-Blaise
Les Viandes Ultra Meats	St-Esprit
Olymel and Company Ltd.	Vallée Jonction
Olymel and Company Ltd.	Princeville
Olymel and Company Ltd.	St.Valerien
Les Salaisons Brochu Inc.	St.Henri, Cte Levie
Abattoir Dubreuil Enr	Ste-Hénédine
Jacques Forget Ltée.	Ste-Louis de Terrebonne
9078-7623 Québec Inc. (Lucyporc)	Yamachiche
Abattoir de Luceville Inc.	Luceville
Abattoir St-Alexandre (1982) Inc.	St-Alexandre
Abattoir St-Pascal Ltée	St-Pascal
Abattoir Larosse & Fils Inc.	St-André Avelin
Viandes Giroux (1977) Inc.	East Angus
Atlantic Provinces	
Antigonish	Antigonish, Nova Scotia
Larsen Meat Packers	Berwick, Nova Scotia
Garden Province Meats Inc. – Maple Leaf Inc.	Charlottetown, Prince Edward Island

Source: Livestock Market Review, www.agr.gc.ca/misb/aisd/redmeat/04tabl30.xls

There is greater excess capacity in hog slaughter plants in Western Canada than in Eastern Canada. This is probably due to new state-of-the-art slaughter plants in Manitoba and Alberta

Slaughter capacity in Federally Registered Slaughter plants in Canada (Million head), 2004

	Western Canada	Eastern Canada
Capacity[b]	13.4	13.9
Slaughter[a]	8.4	12.8
Excess Capacity	5.0	1.1
% Capacity Utilized	62%	92%

Source: Market and Industry Services Branch, AAFC.
[a] Hog Slaughter for 2003
[b] 2004 capacity based on five days a week, one shift operation for 50 weeks per year.

Excess slaughter capacity in Western Canada can also be attributed to new state of the art slaughter plants in Manitoba and Alberta.

Federally inspected hog slaughter is becoming more concentrated over time with fewer plants accounting for most of the hog slaughter

Federally-Inspected Hog Slaughter Plants, 1994-2004[1]

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Number of Plants	50	54	48	52	49	44	48	49	47	46	43
Average Kill[2]	283,655	268,046	292,629	270,557	317,555	395,428	387,349	397,089	446,384	472,343	500,879
Top 4 Plants[3]	53%	53%	52%	54%	56%	56%	64%	64%	72%	74%	74%
Top 8 Plants	78%	77%	76%	74%	76%	74%	80%	83%	86%	86%	86%

Source: AAFC, Hog Slaughter Statistics for Federal Abattoirs, www.agr.gc.ca/misb/aisd/redmeat/tabl31.xls.
[1] Federally inspected hogs.
[2] Average number of hogs slaughtered per plant per year.
[3] Percent of total federally inspected hogs slaughtered by the 4 largest plants (companies) in that province.

The four largest plants accounted for 74% of total federally-inspected hog slaughter in 2004 compared to just 53% in 1995.

The effective concentration is even higher in the central and prairie provinces

Federally-Inspected Hog Slaughter Plants by Region, 2004

	B.C./Alta.	Sask./Man.	Ont.	Que.	Canada
Number of Plants	8	8	6	18	43
Average Kill[1]	404,753	661,977	695,017	463,736	500,879
Top 4 Plants[2]	95%	99%	99%	78%	86%

Source: AAFC, Hog Slaughter Statistics in Federally Registered Abattoirs, www.agr.gc.ca/misb/aisd/redmeat/tabl31.xls.
[1] Average number of hogs slaughtered per plant per year.
[2] Percent of total federally-inspected hogs slaughtered by the 4 largest plants (companies) in the province.

The four largest plants in most regions account for over 95% of the kill in federally-inspected hog plants.

Major players in pork processing include Maple Leafs Foods Inc., Olymel and Groupe Brochu

Major Canadian Pork Processing Companies, 2003

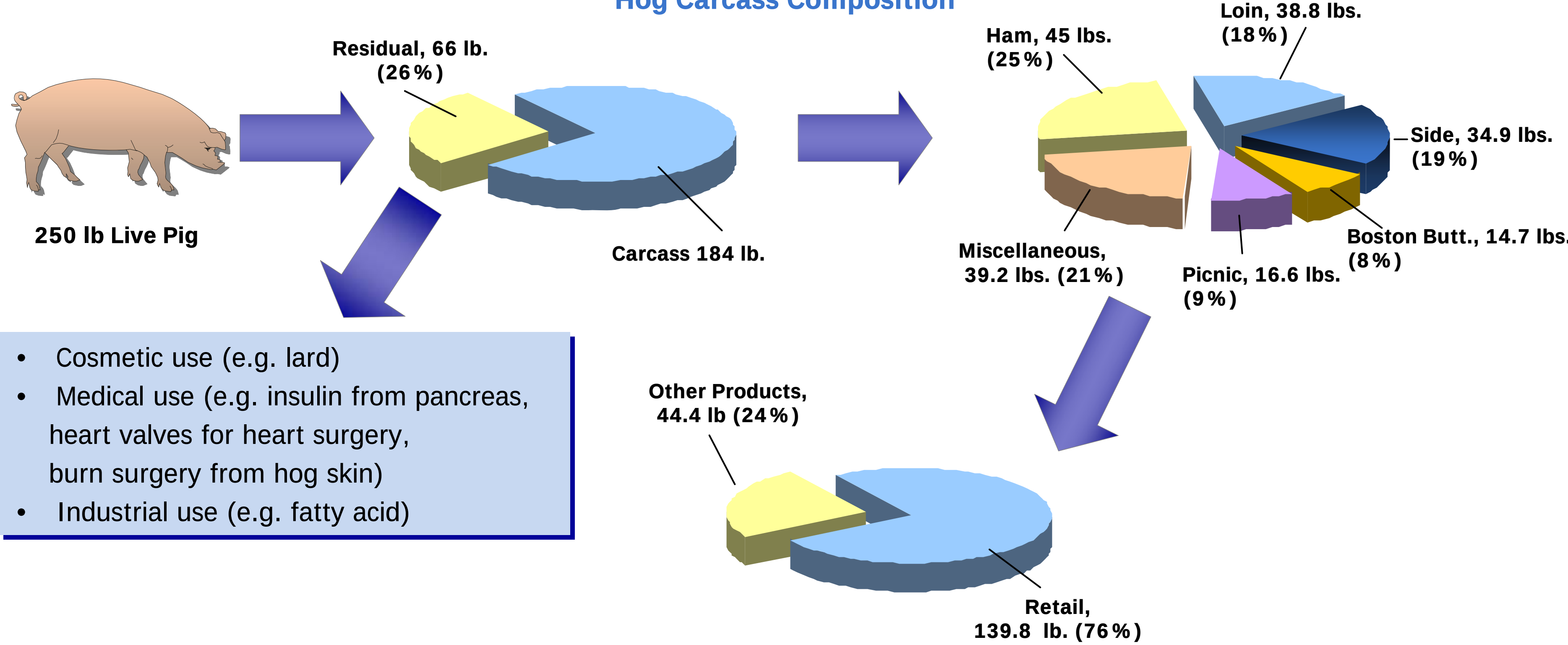
Processing Company	Location	Total Revenue (Million $)	No. of Employees
Maple Leaf Foods Inc.	Toronto, Ontario	5.282	22,784
Olymel	St-Hyacinthe, Quebec	1,847	8,000
Schneider Corporation	Kitchener, Ontario	770	5,000
Groupe Brochu	Lévis, Quebec	585.5	3,100
Premium Brands Inc.	Richmond, B.C.	151.4	906

Source: Hoover's Online, Food Processing Company Index, http://biz.yahoo.com/ic/131/131409.html

Schneider Corporation was purchased by Maple Leaf Foods Inc. in April 2004. Premium Brands Inc. has changed focus away from slaughter towards further processing.

Virtually all parts of the hog can be processed and around three quarters of its carcass weight is sold as fresh/frozen cuts for retail

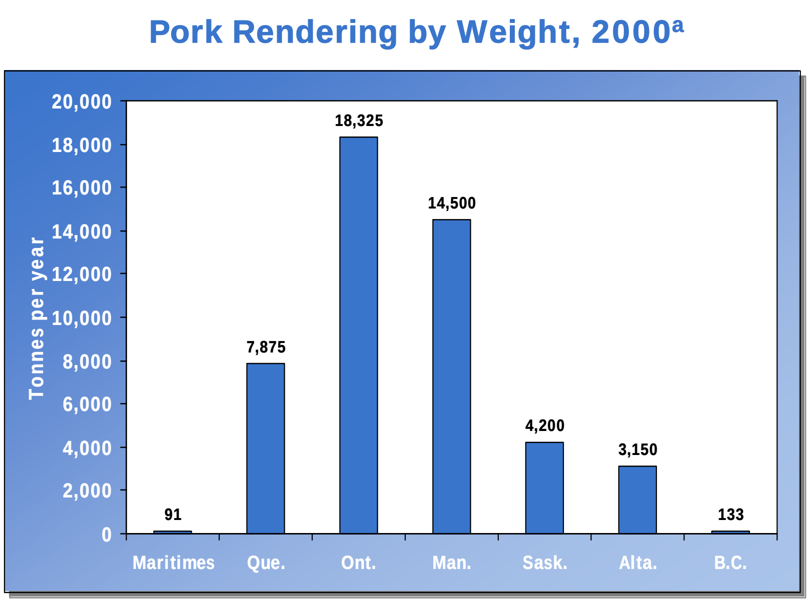
Hog Carcass Composition

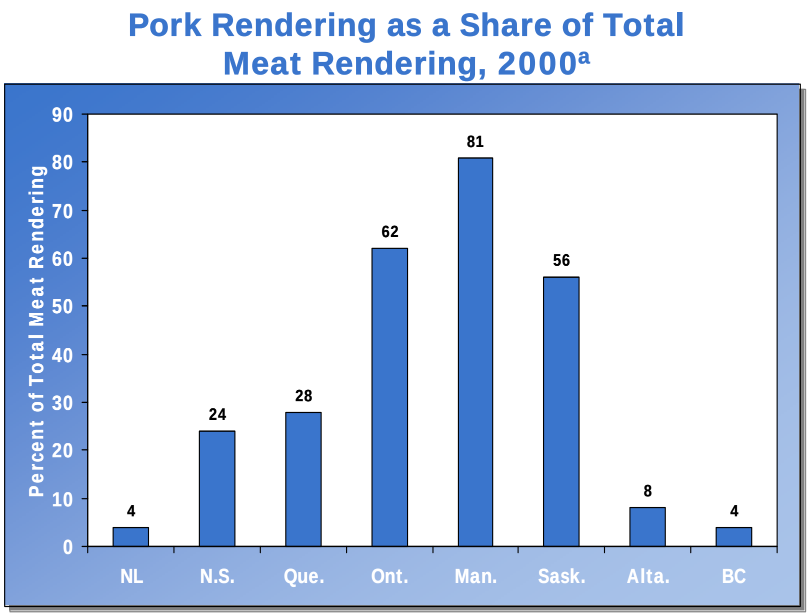


- Cosmetic use (e.g. lard)
- Medical use (e.g. insulin from pancreas, heart valves for heart surgery, burn surgery from hog skin)
- Industrial use (e.g. fatty acid)

The remaining quarter is further processed into items such as deli meats and convenience foods.
Meat production accounts for three-quarters of the live hog weight, and is the predominant use. Select parts of the hog can also be used for clothing, cosmetics, pharmaceutical, medical and other industrial manufacturing use.

More than 80% of pork rendering takes place in Quebec, Ontario and Manitoba





Source: Red Meat Section, AISD, MISB

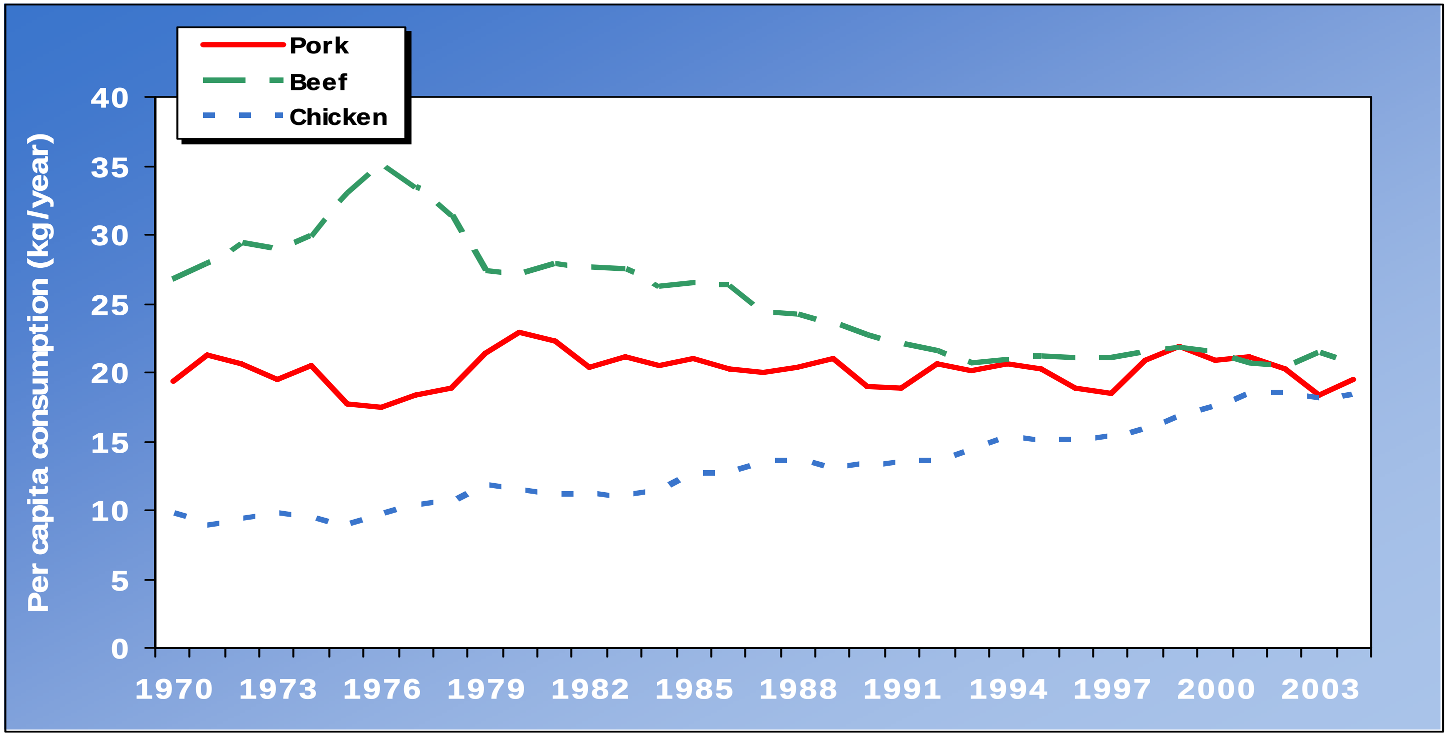
[a] Data for 2000 from 2001 Rendering Plant Survey and data for the Maritimes includes only Newfoundland and Nova Scotia.

One hundred and twenty-four thousand tonnes of pork was rendered in 2000. Pork makes up over 50% of all meat renderings in Ontario, Manitoba and Saskatchewan.

D. Food Distribution and Domestic Consumption

Over time per capita consumption of pork meat in Canada has remained relatively stable around 20 kg/year, but declined between 2002 and 2004

Apparent Meat Per Capita Disappearance[1], 1970-2004

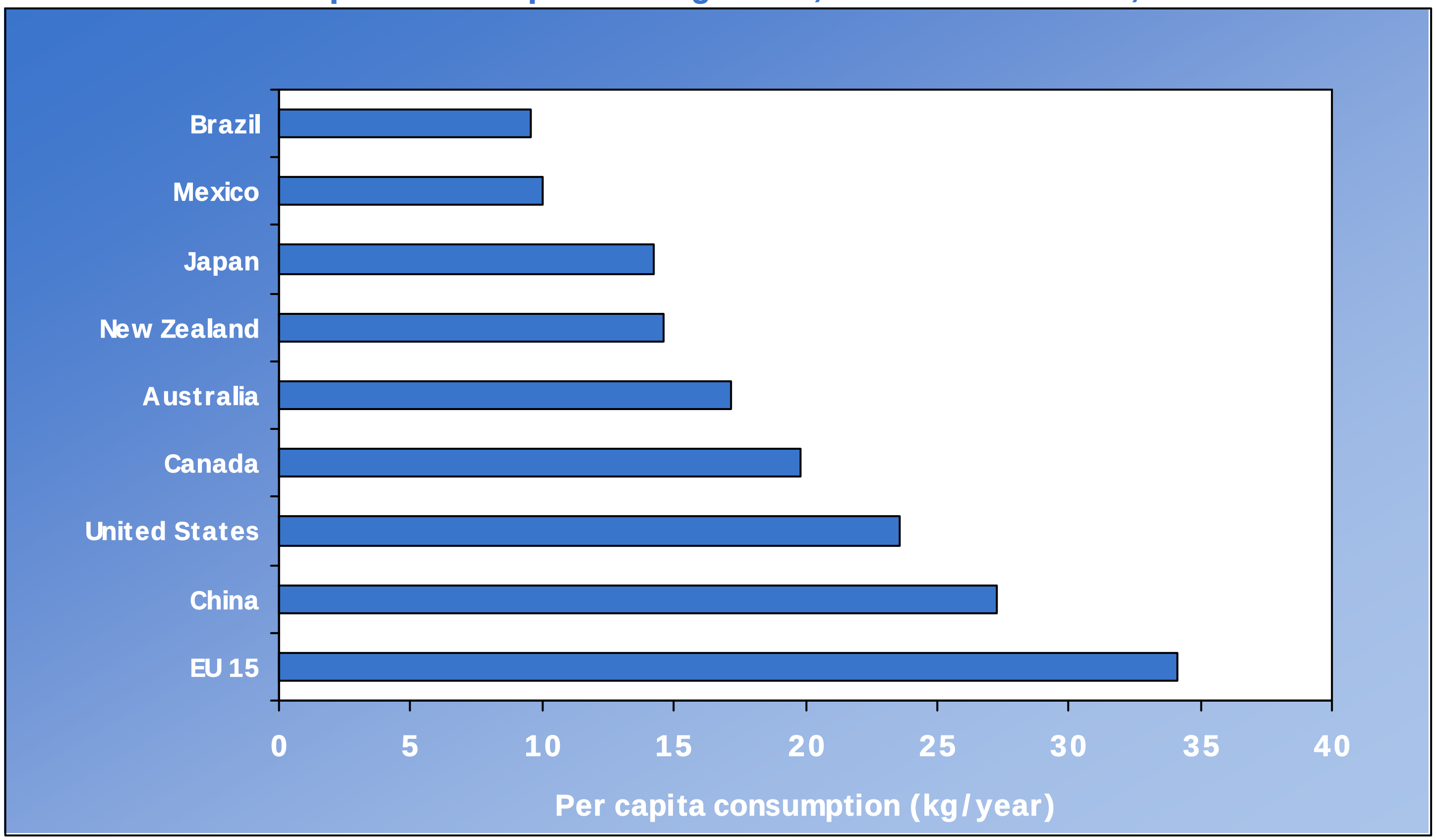


Source: Statistics Canada, Apparent Per Capita Food Consumption in Canada, Annual, CANSIM Table 002-0011
[1] Boneless weight basis

The pork per capita consumption is stable while beef per capita consumption is in a period of decline and chicken per capita consumption is rising.

Canadians consume less pork meat on a per capita basis than do Americans and Europeans

Per Capita Consumption of Pig Meat[1], Selected Countries, 2003

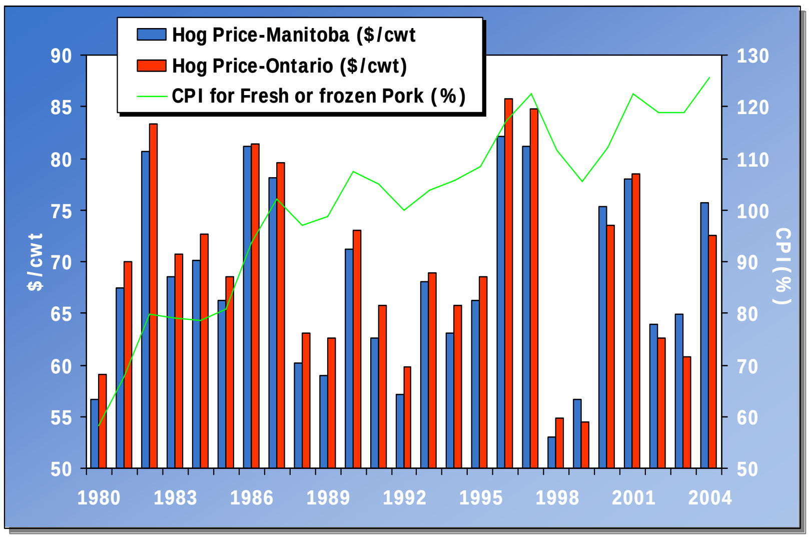


Source: OECD, 2005 OECD Agricultural Outlook, 1970-2014, www.oecd.org/dataoecd/55/44/32980897.xls

[1] Retail weight basis.

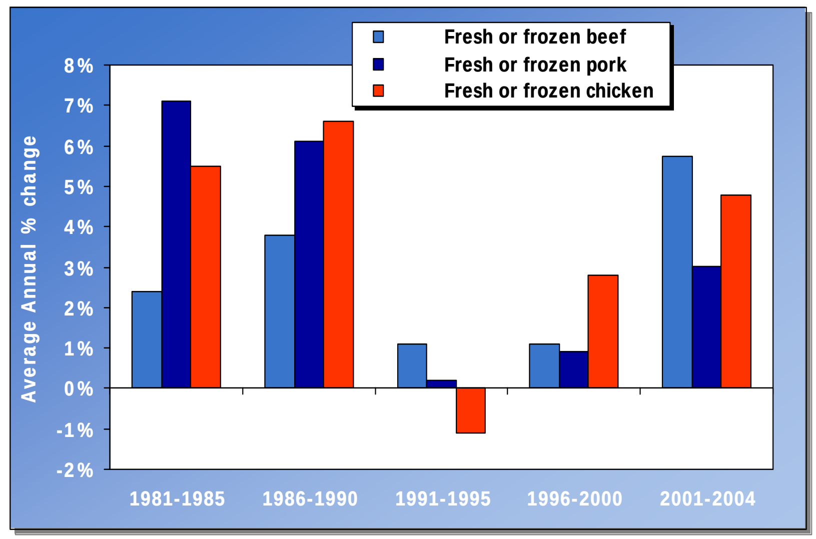
While hog producer prices have shown great volatility with little growth, consumer pork meat prices over the last 20 years have been trending upwards, with relatively modest fluctuations

CPI for Pork Meat and Hog Market Prices, 1980-2004



Source: Statistics Canada, Hog Statistics, 2005,
Cat. No. 23-010-XIE, Vol.3, No. 3
Statistics Canada, CANSIM Table 326-0002

CPI for Selected Meat Products, 1980-2004

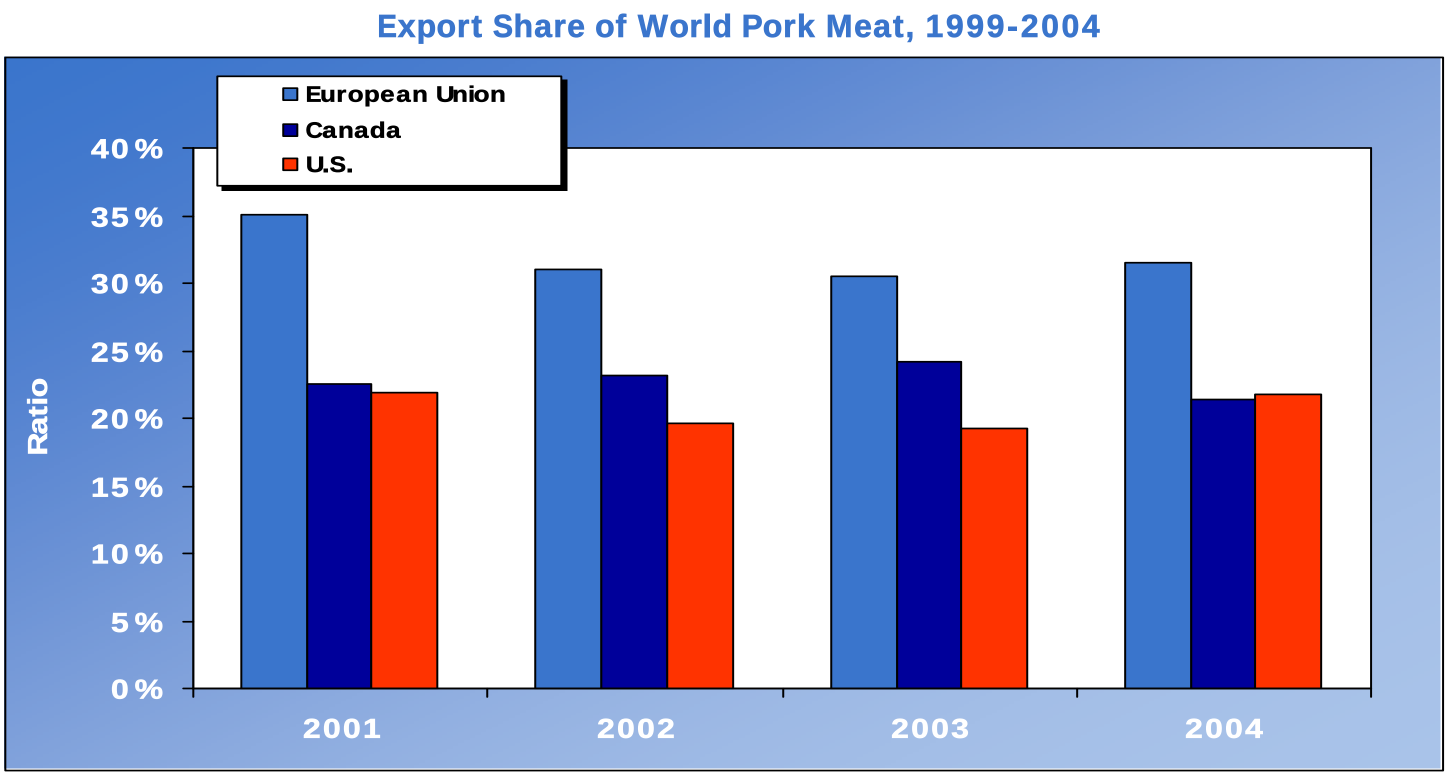


Source: Statistics Canada, CANSIM Table 326-0002

Retail pork meat prices reflect price movements of substitute meats, such as beef and chicken, as well as live animal prices and processing costs.

E. Trade

Canada supplies about one-fifth of total international pork trade

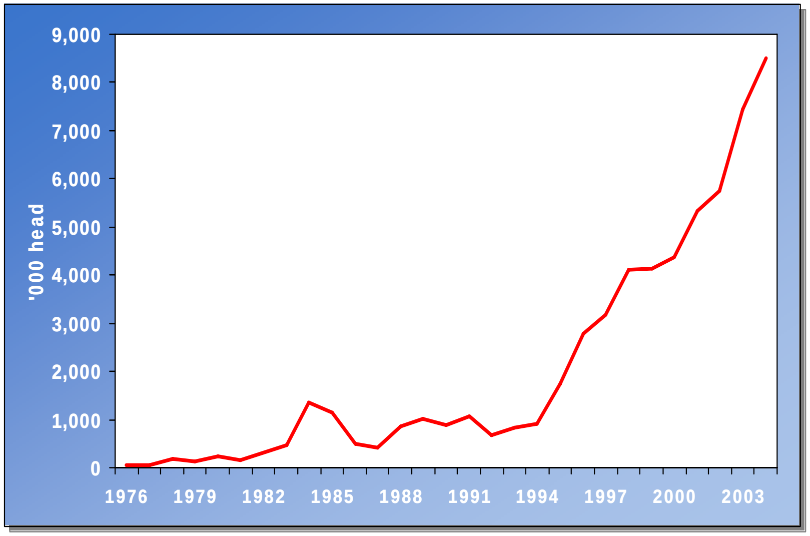


Source: USDA, FASONLINE, www.fas.usda.gov/dlp/circular/2003

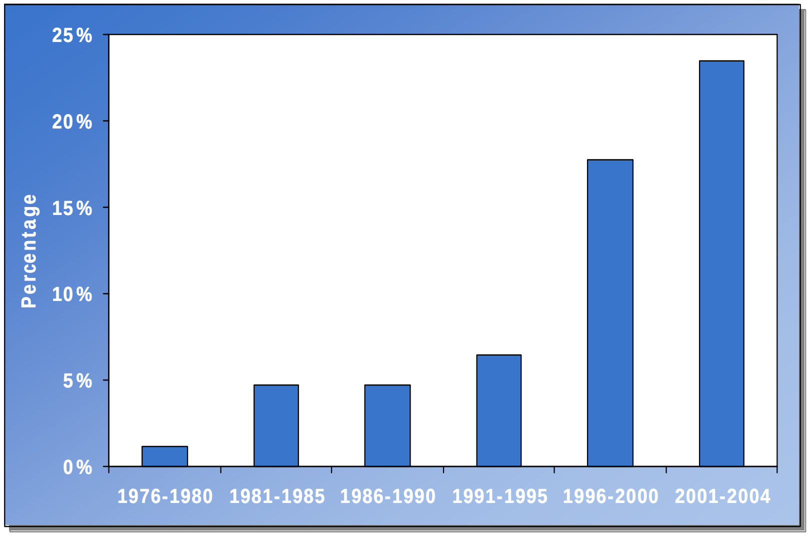
Canada's share of world pork exports has been increasing over time but declined marginally in 2004 due to an increase in domestic consumption.

Live hog exports have increased dramatically since the mid 1990s and accounted for over 20% of hog production in 2001-2004

Live Hog Exports, Canada, 1976-2004



Total Hog Exports as a Ratio of Production, Canada, 1976-2004

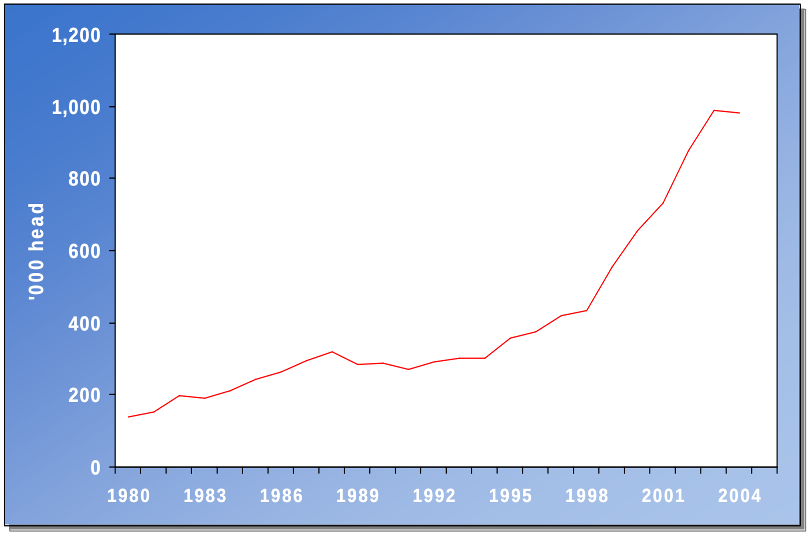


Source: Statistics Canada, Hog Statistics, 2005, Cat. No. 23-010-XIE, Vol.3, No. 3

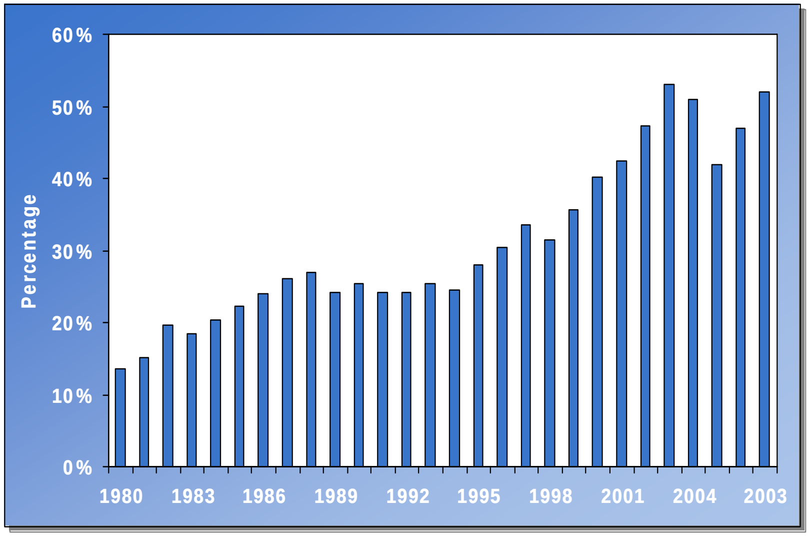
A total of 8.5 million head of hogs were exported in 2004.

Canadian pork meat exports have also shown substantial growth since the mid 1990s and accounted for over 50% of total pork meat production in 2004

Pork Meat Exports, 1976-2004



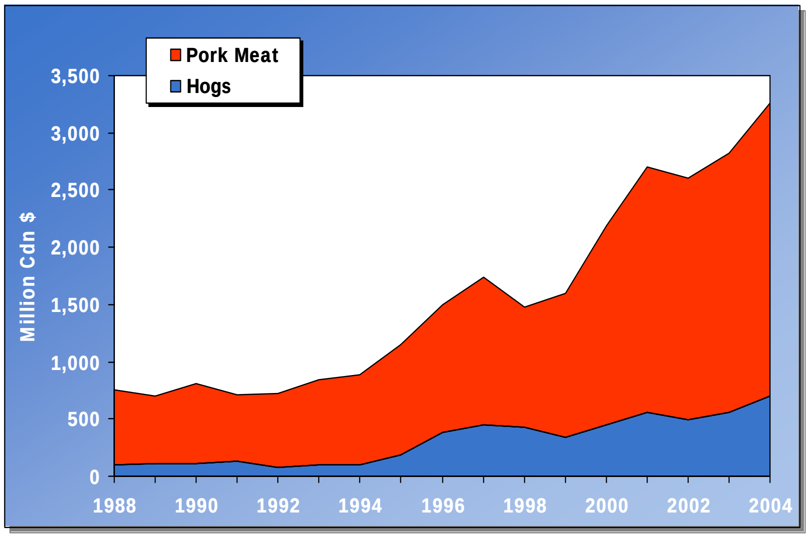
Pork Meat Exports as a Ratio of Pork Meat Production, 1976-2004[1]



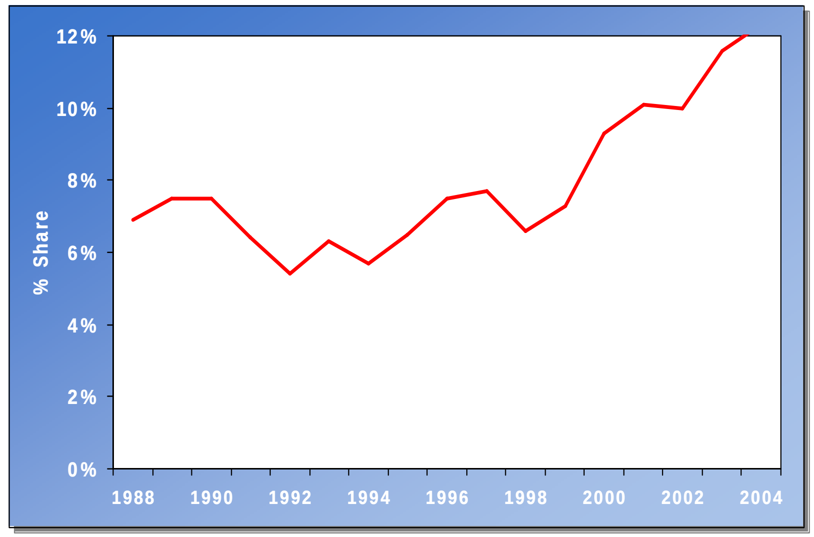
Source: AAFC, Economic Sectoral Analysis
[1] Pork Meat production does not include fats and edible offal.

Pork exports have increased over the past few years and are now accounting for 12% of the total value of Canadian agriculture and agri-food exports

Pork Export Value, 1988-2004



Pork Export Value Share of Total Value of Agricultural and Agri-Food Exports, 1988-2004



Source: Statistics Canada, Canadian International Merchandise Trade Database, AAFC Aggregation

Pork meat makes up approximately 78% of total pork export value and live hogs the remaining 22%.

The form of hog and pork exports vary by province

Pork Exports by Province, 2004

Provinces	Live Hogs		Meat, Fresh or Frozen		Cured Meat, Edible Offal & Prepared/Preserved		Total	
	(Mil. $)	% Share	(Mil $)	% Share	(Mil $)	% Share	(Mil $)	% Share
B.C.	3.8	0.5	8.3	0.4	46.0	9.6	58.1	1.8
Alta.	72.7	10.3	347.1	16.7	20.1	4.2	439.8	13.5
Sask.	24.2	3.4	33.1	1.6	66.1	13.8	123.5	3.8
Man.	352.4	50.1	368.3	17.7	49.3	10.3	769.9	23.6
Ont.	246.6	35.1	449.7	21.7	118.9	24.8	815.3	25.0
Que.	2.9	0.4	860.4	41.4	177.6	37.0	1040.9	31.9
N.B.	0.1	0.0	0.00	0.0	0.2	0.0	0.3	0.0
N.S.	-	-	4.5	0.2	2.2	0.5	6.7	0.2
P.E.I.	0.1	0.0	5.9	0.3	0.2	0.0	6.1	0.2
N.L.	-	-	-	-	0.0	0.0	0.0	0.0
Canada	**702.8**	**100.0**	**2,077.3**	**100.0**	**480.5**	**100.0**	**3,260.6**	**100.0**

Source: Statistics Canada, Canadian International Merchandise Trade Database, AAFC Aggregation

Manitoba and Ontario account for over three-quarters of total live animal export value. In contrast, Quebec is the major exporter of pork meat accounting for about 40% of all Canadian export sales. Ontario is the second most important exporter of pork meat.

Nearly all feeder and market hog exports are destined for the U.S.

Live Hog Exports by Country of Destination, 1990-2004

Country of Destination	1990		1995		2000		2004	
	(Mil. $)	% Share	(Mil $)	% Share	(Mil $)	% Share	(Mil $)	% Share
U.S.	112.1	98.4	190.9	99.9	446.3	99.8	700.6	99.4
Mexico	1.2	1.1	0.0	0.0	0.4	0.1	0.1	0.1
Other	0.6	0.5	0.2	0.1	0.5	0.1	2.2	0.6
Total	113.9	100.0	191.7	100.0	447.2	100.0	702.8	100.0

Source: Statistics Canada, Canadian International Merchandise Trade Database, AAFC Aggregation

Live animal exports to the U.S. generated almost $700 million in 2004. Livestock sales, mostly breeding stock, to other countries accounted for another $2 million.

The US is the major purchaser of Canadian pork followed by Japan

Canadian Pork Meat Exports by Country of Destination, 1990 and 2004

	Fresh or Frozen Pork				Cured, Edible Offal and Prepared/Preserved Pork			
	1990		2004		1990		2004	
Countries	(Mil. $)	% Share	((Mil. $)	% Share	((Mil. $)	% Share	((Mil. $)	% Share
U.S.	437.5	71.7	996.0	47.9	67.7	82.5	346.7	72.2
Japan	130.6	21.4	729.3	35.1	1.3	1.5	11.0	2.3
Mexico	9.3	1.5	74.5	3.6	2.7	3.3	17.9	3.7
Others	33.2	5.4	277.5	13.4	10.5	12.7	104.9	21.8
Total	**610.6**	**100.0**	**2077.3**	**100.0**	**82.1**	**100.0**	**480.5**	**100.0**

Source: Statistics Canada, Canadian International Merchandise Trade Database, AAFC Aggregation

Together the U.S. and Japan account for over 80% of fresh and frozen pork meat export value and about 75% of cured, edible offal and preserved pork export value.

Canada is not a major importer of live hog or pork

Pork Imports, Canada, 2004

Country of Origin	Live Hogs (Mil. $)	Live Hogs % Share	Fresh, Chilled and Frozen Pork Meat (Mil $)	Fresh, Chilled and Frozen Pork Meat % Share	Cure, Edible Offal and Prepared/Preserved Pork Meat (Mil $)	Cure, Edible Offal and Prepared/Preserved Pork Meat % Share
U.S.	1.4	72.8	230.5	96.4	143.9	96.1
Denmark	0.5	25.6	6.7	2.8	1.3	0.9
Others	0.0	1.7	1.9	0.8	4.5	3.0
Total	**1.9**	**100.00**	**239.1**	**100.00**	**149.8**	**100.0**

Source: Statistics Canada, Canadian International Merchandize Trade Database, AAFC Aggregation

Imports originate primarily from the US. Denmark is a distant second source of Canadian pork imports.

Supply Chain Initiatives

Various supply chain initiatives are developing within the Canadian pork industry to respond to changing consumer demands, to increase supply chain efficiencies, and to reduce production and transaction costs. These initiatives generally fall under two categories: initiatives that provide closer vertical coordination between different stages of the supply chain and horizontal initiatives that focus on quality improvements at a single stage

Chart F.1: Closer Vertical Coordination Initiatives

- **Vertical Integration**

  Vertical integration occurs when a single business organization owns several stages in the supply chain.

- **Value Chains**

  Value chains occur when independent business organizations within a supply chain work together in a vertical alliance to meet specific market objectives for the mutual benefit of all links in the chain. An example of a value chain is the Target Hog Alliance.

- **Contractual Arrangements**

  Contractual arrangements refer to buyer-seller agreements that attach legally binding conditions on the sales transaction. Contractual arrangements encompass marketing contracts and resource-providing contracts. Production and resource-providing contracts involve closer vertical coordination than do marketing contracts. In a production contract, the buyer specifies and/or monitors production practices and input usage of the seller. In a resource providing contract, the buyer supplies the key inputs, as well as specifying and monitoring the seller production practices.

Vertical Integration

In the pork industry there are numerous examples where vertical integration has occurred either upstream or downstream the supply chain. Olymel is an example of a producer cooperative, Coopérative fédérée de Québec, that has integrated downstream into slaughter, processing and distribution activities. Maple Leaf Foods Inc. has integrated both upstream and downstream.

Maple Leaf Foods

Maple Leaf Foods Inc. engages in pork packing activities through its holding of the Maple Leaf Pork Co., in further pork processing activities through its holding of the Maple Leaf Consumer Food Co. and in rendering activities through its holding of the Rothsay Co. Maple Leaf Foods Inc. upstream holdings include Elite Swine, the largest hog production business in Western Canada, Landmark Feeds, the largest feed manufacturer in western Canada, and Shur-Gain, a feed manufacturer in eastern Canada

Value Chain

There are value chain initiatives in the hog industry. A good example is the Target Hog Alliance

Target Hog Alliance

This is an industry-wide alliance from seedstock level through to the consumer with the aim of enhancing the safety and quality of pork through a process of certification of the breeding stock and/or of farms. The ultimate goal is to generate improved performance for the Ontario pork industry and ensure financial benefits for breeders, producers, packers and consumers.

Chart F.2: Horizontal Initiatives

Horizontal initiatives occur when a group of independent business organizations at a single stage of a supply chain work in alliance to meet specific market objectives for their mutual benefit. For horizontal initiatives that are focused on quality improvement, there is potential for stages further down the supply chain to receive spillover benefits from the initiative if they can trace forward the quality improvement to the consumer.

Examples of horizontal initiatives in the pork supply chain are the Canadian Pork Council's Quality Assurance Program, Environment Management System and the Animal Care Initiative.

The Canadian Pork Council's Canadian Quality Assurance Program

This is a national quality assurance program which was formally launched in 1998. Its focus is three-fold: food safety, product quality and production integrity. The Canadian Pork Council received CFIA recognition of the Quality Assurance Program in July 2004.

This is a HACCP-like program. "Producers following the program must meet a set of national standards. These standards range from writing and following protocols for barn sanitation, feed mixing, medication use and injection techniques to keeping specific records on feeds and medications used on-farms. It calls for standard protocols on addressing physical hazards such as broken needles. It covers chemical hazards such as heavy metals, pesticides and veterinary products. It also includes measures that should help reduce biological hazards from parasites and bacteria on the farm. To ensure that producers are indeed following the program and meeting the standards, a program validator will visit the farm, ensure that documentation is in order and verify that protocols are being followed in practice. A certain percentage of validators will be audited to ensure accuracy and consistency" (Canadian Pork Council, www.cpc-ccp.com, October 2002).

The Canadian Pork Council's Environment Management System

This is a voluntary and consensus-based national farm program. It includes specific requirements for policy, planning, implementation and operation, checking and corrective action and management review. For a hog operation to be registered to this standard, it has to meet all requirements of the standard and be audited and registered by a third party registrar accredited by the Standards Council of Canada Canadian Standards Association, http://www.cpc-ccp.com/envir/EMS_requirements.pdf)

The Canadian Pork Council's Animal Care Initiative

This initiative involves the development of on-farm guidelines for animal care in the hog industry. The guidelines build on the existing code of practice for the care and handling of farm animals: pigs. (Canadian Pork Council, www.cpc-ccp.com).