

Agriculture In Canada: Who Will Grow The Food?

Dr. Mel Lerohl and Dr. Jim Unterschultz

Paper presented at the Western Agricultural Economics Association Annual Meetings, Vancouver, British Columbia, June 29-July 1, 2000.

Copyright 2000 by M. Lerohl and J. Unterschultz. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.

Mel Lerohl, Professor
Department of Rural Economy
University of Alberta
Edmonton Alberta, Canada T6G 2H1
Ph. 780-492-5439. Mel.Lerohl@ualberta.ca

Jim Unterschultz
Associate Professor
Department of Rural Economy
University of Alberta
Edmonton Alberta, Canada T6G 2H1
Ph. 780-492-5439. Jim.Unterschultz@ualberta.ca

Abstract

“Agriculture In Canada: Who Will Grow The Food?”

Key issues in the current agricultural debate include the future of family farms, levels of government support for farms, the roles of marketing institutions and the effect of new trade arrangements. In part, these issues have arisen because of recent price volatility, but the agricultural debate has also raised basic questions: Can farming in Canada survive, and if so, what will the new farms look like?

The future of farming is approached through evidence on land values and assessments of alternative land use. The future structure of farms is approached through a review of farm size, location and product mix. Farm sizes are increasingly bi-modal, with small farms relatively insulated from farm markets, and large specialized farms dependent on the market for a narrow range of commodities. Policy changes influencing product mix or regional specialization are also reviewed. About one-half of farm output in Canada now comes from the prairie region of Canada. Open trading relationships and subsidy changes are further modifying the regional location of farming. Changes in marketing board arrangements and withering of prime farmland restrictions will lead to further shifts.

The following appear to be key factors in assessing future directions for farming and farm structure: For small farms, numbers are not declining, but these operations contribute relatively little to farm output. For commercial farms, technology and scale factors are leading to larger sizes and increasing specialization. Specialization is expected to occur regionally as well as within farms, and the prairie provinces are likely to become an increasingly important part of Canadian agriculture. The sizes of commercial farms are such that few farms will be financed by single families, and the balance sheets as well as the management structures of new commercial farms will increasingly mirror those in the non-farm economy.

AGRICULTURE IN CANADA: WHO WILL GROW THE FOOD?

M. Lerohl and J. Unterschultz

1. GOALS

The debate about Canadian agriculture is on going. Key issues under discussion in Canada are the future of family-based and largely family-financed farm businesses, the level of government support for agriculture, the role of agricultural marketing boards and the role of agricultural trade. A series of low commodity prices in pork, cereals and oilseeds has raised the level of debate regarding the future of the agriculture sector in Canada. These issues include the future structure of the industry and even whether farming in Canada is viable.

This paper sets out a framework for forecasting the future of agriculture in Canada. Our primary focus is on Western Canada where agriculture has had a dominant role during many decades in the twentieth century. First, information on who currently grows the food in Canada is presented. The current farm structure is then placed within the past and present Canadian policy context. Finally this information is used to answer whom, if anyone will grow the food in Canada.

2. WHO GROWS THE FOOD

Agricultural production occurs across all regions in Canada (Figures 1 and 2). The prairie regions had the largest market receipts from primary agriculture (Figure 3) in 1998/1999. Gross farm market receipts from the prairie region equaled the total gross farm receipts from all the other regions in 1999. Grains, oilseed and red meats dominate agriculture production in Canada (Figure 4). Wheat and beef is a large share of this total.

The importance of agricultural production varies by Canadian province. Overall primary agricultural production and food processing contributed about 4% to Canadian GDP in 1998 (Figure 5). The Prairie Provinces, Alberta, Saskatchewan and Manitoba, receive more than 4 percent of their GDP from primary agriculture and food processing (Figure 5) although Ontario and Quebec dominate the food-processing sector in Canada.

The cereals, oilseed and red meat sectors are relatively open to international market forces. The producer subsidy equivalent measures for these sectors for Canada are relatively low when compared to the United States or the EU (Table 1). Canada had \$6.0 billion and \$10.4 billion of agricultural and processed imports respectively in 1998 (Figure 6). At the same time Canada exported \$11.9 billion and \$10.7 billion of agricultural and processed products respectively (Figure 6). The international market, in

particular the United States, is very important to the agriculture and food industry in Canada.

The census definition of a farm in Canada is based on production for sale of a wide range of products produced on farms. The definition allows a frequent intermingling of farm and non-farm activities by farm operators. The Census definition of a farm permits farm data to include results from farm operations of quite limited scale, and 20 percent of farms in 1996 are in the smallest size group as measured by area (Table 2). The number of farms in this size group has persisted over time, with the proportion of small farms increasing overall in Canada and in Western Canada. The other size group that has grown is the largest farms, defined as those of 1600 or more acres. The pattern of large-farm growth also shows in the data on farm numbers by gross sales: In the 10 years preceding the 1996 Census of Agriculture, the number of farms with annual sales over \$250,000 more than doubled. In 1996, 56 percent of farm products sold came from the 13 percent of farms with annual sales exceeding \$250,000. This is not as concentrated as US agriculture, but large farms have become a reality in a short time (Figure 7).

With total numbers of farms declining, small farm numbers remaining stable, and numbers of large farms increasing, it is not surprising there are fewer mid-size farms. Within this increasingly bi-modal distribution, the average size of farms in the large portion of the distribution has been growing. The average amount of capital per farm in Canada in 1996 was \$565,000, and the average net worth per farm (including non-farm assets) is in excess of \$600,000. Both assets per farm and net worth per farm are growing, and in some regions (prairie Canada, for example) farm sizes are larger than the Canadian average (Table 3).

2.1.1. FORCES AFFECTING FARM SIZE

Much of the change in farm size in the past seems to have been due to new technology and to attempts to achieve lower costs by increasing farm sizes. Technology does not stay constant, and the limit of change to farm size is unclear. What is clear is that sizes that were appropriate to former technologies not cost-efficient. Grain operations below about 1500-2000 acres, hog operations with fewer than 200-300 sows, dairy operations for 100 cows or less, or cattle feeding operations capable of feeding fewer than 4000-5000 animals, appear to be operations that would not be established under current economic conditions. This change in farm structure is straining the traditional source of business financing composed of private family capital and debt financing. Farm families, on their own, are not able to raise sufficient equity capital to participate in these scale economies.

The pressures to achieve larger operations are partly due to new capital-intensive technology, technology that becomes economic only at large farm sizes. It may also be driven by the growing ability of farm operators to deal with new technology (Table 4). The most marked change in farmers' educational attainments is in exposure to post-secondary education. Forty percent of farmers, and about half of young farmers, report some post-secondary education. (Statistics Canada)

If the trends of the recent past continue, the largest farms will grow in size, and the proportion of output from large farms will grow. Farm sizes are expanding, and new units are likely to be larger and to rely increasingly on paid labor. Scale factors are important in spreading the costs of capital and top-flight management, and specialization also helps to establish a scale that permits work schedules for employees and employee lifestyles similar to those in non-farm industries. Casual observation suggests the farm sizes have continued to grow since the last census in 1996.

A 1200-sow farrow-to-weiner operation is likely a new minimum for hog production. Average hog farms in Canada are much smaller, averaging 523 pigs per farm at the 1996 Census but these numbers hide where the actual increase in pork production has occurred. The focus on new hog barn technology has been in the prairie region, however, and hog numbers per farm there have almost doubled in five years, to 1542 pigs per farm in 1996. The limits on farm size are likely to be technological and associated with waste disposal, disease risk and possibly water. The Canadian prairies still have large land areas far removed from major urban centers. However even in these areas concerns about the siting of intensive livestock operations can prevent new operations from establishing. Also, expansion of processing capacity in Western Canada has created an excess of modern processing capacity over actual pork production. This may be another force contributing to pork expansion in Western Canada.

Average farm size in prairie Canada, the small grains center for Canada, is 920 acres per farm (Table 3). Casual inspection suggests that grain production most often takes place on larger units than this, probably clustered in the range of 2000 acres per farm. Grain farms of 5,000 to 10,000 acres are no longer uncommon, even in higher moisture/shorter season areas where timing of operations is critical. Custom farming services are becoming available and these appear to deal well with capital cost and machine sizing issues for smaller farmers, and may be suited to off-farm investors in farmland. It remains to be seen whether custom farming services become permanent features of the agricultural landscape, or represent an intermediate stage while farm sizes are being adapted to current technology.

A large portion of grain production takes place on land not owned by the operator. As of 1996, 60 percent of the farmland in prairie Canada fitted this category. The practical limits to size of grain farm are not obvious, although field size and the need to move machinery and equipment from field to field may impose limits in moderately populated areas especially, but probably not in the most arid parts of the plains.

Dairy operations in Canada have typically been small, with the average dairy farm in Canada in 1996 at 40 cows, rising to 98 cows in the prairie region. Much of the industry occurs in the central provinces of Canada (Canadian Dairy Commission). This farm size is in part driven by the market structure. The dairy industry in Canada is part of a supply-managed marketing board system and dairy farms require significant capital to purchase the right to produce (i.e. quota). Technology in the form of automated feeding and milking appears to be moving the industry toward larger units despite the marketing

structure. It is unlikely that new, automated dairy operations are being established with less than several hundred cows, and it seems probable that much larger units are needed for economic introduction of highly robotic technologies in dairy. Robotic milking technology is just now being introduced on some of the more innovative operations in Canada. The costs involved suggest that robotic milking technology is best adapted to units of very large units, perhaps 500 cows or larger.

Cattle production is typically separated between the areas where the cattle are raised, and the places where they are fed. The average number of cattle per farm on Canadian beef farms was 105 in 1996, a low number that includes the current year calf crop in most cases. Only in Alberta, center of Canada's beef industry was the number of beef cattle per farm well above the average, at 163. Cattle produced on these farms are sometimes backgrounded or fed to market weight in farm feedlots, but most are fed to market weight in large commercial feedlots. Most cattle feeding takes place in the prairie region, close to major packinghouses and in climatic conditions that permit feeding to take place in open pens. Compared to enclosed feeding arrangements practiced in non-prairie Canada, the capital cost of cattle feeding in the prairies is modest. However, scale factors are present in prairie cattle feeding, with main pressures for increased unit size arising from issues of staffing and organization, feeding systems, purchase of feeders and risk management generally. As with hogs, limits to the size of cattle feedlots arise from waste management issues, water availability and possibly management. There is a wide range in sizes of commercial feeding operations, from about 10,000 to 100,000 animal capacity, suggesting costs are relatively constant over a wide range of capacities. The continued operation of farm feedlots, those with fewer than 1000 or 2000 animals, appears doubtful.

2.1.2. WHAT ABOUT THE SMALL FARMS?

Small farms produce neither very much farm product, nor significant net farm income. These farms are diversified into non-farm activities (Figure 8). Some smaller farms may be rural residential operations with barely sufficient farm involvement to permit qualifying for farm property tax eligibility or farm fuel benefits. Others may be investments by non-farmers. Still others may be farm operations that are at a scale appropriate to the regions in which they are located. Some are probably holding operations while the labor, capital or land awaits a better farm or off-farm alternative. High proportions of small farms are found in areas where urban pressures are most obvious: Table 5 shows selected features of farms in three regions of Canada. Niagara and Fraser Valley are rural areas in the periphery of large urban centers in Ontario and British Columbia respectively. Swift Current is a rural area in a rural, agricultural province. The first difference between rural Swift Current and urban Niagara and Fraser Valley is in the high proportion of small farms in the urban areas. These areas also have lower investment in key farm capital (a tractor is used as the example) and there is no indication (from the relatively low capital investment in pickup trucks) that these small farms are solely tax management arrangements.

Contrary to widespread opinion (for example, Bollman et al. 1995), these operations are remarkably durable, in aggregate at least. Average incomes on small farms (Figure 8) are about \$50,000 annually, although only about 10 percent is from farm sources. To the extent these farms are part of agriculture, they are likely to be serving niche markets for particular produce, or their focus may be low-technology products such as organically grown produce. Stable numbers of these farms suggest they represent a sustainable lifestyle for many, and changes in incomes over the 1985-95 period have been similar to those in urban areas. While incomes are below those of large farms, small farms seem to permit lifestyles that are attractive to many, and the income sacrifices may not be large.

There are no surprises in the farm trends in Canada. The large farms are getting larger and there remain a large number of small farms near urban centers. Technology is a major driving force in the trend towards larger farms and the agriculture sector is still important for several provinces in Canada. Capital access using traditional means may be a constraint on the expanding size of farm operations. Alternative financing arrangements such as limited partnerships, corporate structures and vertical integration are under development to gain access to equity capital. Another factor driving the change in farm structure is change in government agricultural policies.

3. CANADIAN POLICY ENVIRONMENT

The popular image of agriculture as an industry in severe trouble is often presented by selected farm organizations (CFA, NFU). The claims of crisis may be exaggerated. Farm incomes in Canada are stable or growing, and the most recent evidence is that farm cash receipts in 1999 have gone up in spite of well-publicized price declines in the grains sector. Farm sizes are expanding, the incomes of farmers are similar to the incomes of non-farmers, and farm owners' net worth exceeds the value of the farms they operate. Several farm products, especially livestock products, have made inroads into the major world markets for these products.

Cereals and oilseeds continue to be commodities facing cyclical prices and are the most recent commodities to experience relatively low prices. Arguably much of the debate about farm survival is focused on the grains and oilseeds sector, which has been a staple of Canadian agriculture for a very long time. The grains sector needs to adjust its farm structure, its market approach, and perhaps even its political strategy.

Canadian changes in farm structure are not occurring in a policy vacuum. The overall policy trend in the 1990's has been to reduce direct support by governments for agriculture (Figures 9, 10 and 11). The export subsidy on freight rates for Western Canadian grains and oilseeds, commonly referred to as the Crow benefit, was discontinued in 1995. This removal of export subsidies now makes the western Prairies, especially Manitoba, the cheapest source of feed grains in Canada. This in part may explain the shift to Western Canada of beef and pork production. The National Tripartite Stabilization Program for livestock and the Gross Revenue Insurance Program for crops have also been discontinued. Alternative support programs are attempting to decouple

the level of support from any particular commodity. Current programs such as the Net Income Stabilization Account , a partly subsidized savings account, and Agricultural Income Disaster Assistance, a disaster income fund, are both tied to farm income in terms of benefits, contributions or both. Both are designed to be whole-farm programs that operate largely independently of the specific products sold by the farm.

Support for marketing boards is decreasing, or at the very least their roles are under active debate. For example, farm-marketing agencies for pork lost their single desk seller status in the provinces of Alberta, Saskatchewan, Manitoba and Ontario during the 1990s. Wheat Marketing Boards, the Canadian Wheat Board (CWB) for Western Canada and the Ontario Wheat Producers Marketing Board for Ontario are changing administrative structures and pricing policies. The CWB, sole exporter of wheat and barley from Western Canada, explicitly recognizes the impact of its activities on the food and fibre processing sectors. A very active debate is on going about the future of the CWB.

Provincial governments in the Prairies are actively promoting the use of primary agricultural products in further processing activities. This is a major shift in provincial policies from the 1960's, 1970's and even the 1980's. The supply-managed industries such as eggs and chicken are having their support levels changed from exclusion of import substitutes to explicit tariff rates. These tariff rates, while very high, give a direct measure of what it will take to import these products into Canada. The producer subsidy equivalent measures for these farm sectors are also high (Table 1).

There is a view that the demise of some agricultural policy initiatives, for example the Western Canadian export subsidy on freight rates, commonly referred to as the Crow rate, is leading to the demise of the economic base for farming in much of western Canada. The view is that lower market returns, partly due to higher grain transport charges, are leading to the end of farming, and particularly to the end of grain production in Canada (CFA, NFU). But farmland values in Canada have risen in each of the last twelve semi-annual periods (Farm Credit Corporation). Only in Saskatchewan, center of currently depressed grain prices, have there been declines in the past two periods, and these declines were slight. For smaller farms, the modest role of farm sales in their net income means they are unlikely to be much affected by commodity policy.

Overall farm support, a combination of direct and indirect support, declined in Canada through most the 1990's. Compared to the United States, Canadian support to agriculture declined more sharply. It has begun to increase in both countries, but the increase in the US began earlier, and (through 1998 at least) the increase has been greater in the United States (Figure 11).

Government support to farmers has increased in Canada in 1999 and 2000 (Figure 9). This is a direct response to the low commodity prices in the cereals, oilseed and pork sectors. The issue of restructuring the prairie agricultural transportation system is also under debate and new initiatives capping railway revenue from grain transportation may be implemented. However, at least some non-grain sectors of agriculture are thriving in

the current economic regime. Even those sectors currently feeling economic pressure, have not yet felt enough pressure to lower values for key assets such as land.

4. WHO WILL GROW THE FOOD? THE ANSWER

There are constant worries expressed in the popular press about urban sprawl, sustainability, abuse of market power by international firms (NFU) and trade disputes. Some suggest these irritants are symptoms of a dying sector (Blank 1999). Agriculture has almost disappeared in parts of many countries, in some cases because of unsuitable land or climate, and in others because of urbanization. Agriculture is vibrant and a key component of the economy in several parts of Canada. However, there are areas such as Niagara or the Fraser valley, absent direct government intervention through land controls or other initiatives that may see the demise of agriculture from the local economy.

The earliest candidates for the end of farming in Canada are likely to be those with land or climate not particularly well suited to farming, and especially those parts of Canada where the land is being sought for other high-value uses. Main candidates are urban/industrial development and tourism. This likely means that the end of farming for much of the Atlantic provinces, for high-population density areas near Montreal and Toronto, for the corridor between these cities, and for the Lower Fraser Valley of British Columbia. Farming won't die overnight in these areas, but there are probably pretty near alternative uses for the land, whether it is for housing, industry, or for green space. In parts of British Columbia, those alternatives probably exceed agricultural values now, the province for some time having placed controls that prevent farmland from being converted to non-farm uses.

For increasing numbers of farmers, making the adjustment to a non-farm job and lifestyle is becoming easier. Table 4 shows the levels of schooling attained by farm operators. Nearly 40 percent of operators have some post-secondary education, and the proportion rises to nearly 50 percent for those farm operators less than 35 years of age. While these attainments are below those of the non-farm population, they represent a major change in the lowest categories particularly. In 1971, 57 percent of Canadian farm operators reported less than a grade 9 level of schooling. By 1996, this percentage had fallen to less than a third, 16 percent of operators. For those 1996 operators who report post-secondary education, their choice of fields of study is broadly similar to that of the general population: Women operators chose business (20%), then the health professions (19%), with agriculture and biological sciences in fourth place. Men operators with post-secondary education chose engineering and science technologies (33%) followed by agriculture/biology. Farm operators seem to be closing the gap with urbanites in schooling, and skills related to non-farm occupations appear far more widely available than they were a quarter of a century ago.

The alternatives to farming for most of the prairie region of Canada, for northern British Columbia, and for parts of southwestern Ontario are limited. Some of these regions are feeling urbanization pressures – southern Ontario and the Edmonton-Calgary corridor in

Alberta. Some of the areas that do not have high agricultural potential - the eastern slopes of the Rocky Mountains are an example – may have their best use for recreation purposes, and that use may come quite soon. The "view" value of these lands often exceeds their best use in cattle ranching by a factor of three or more. But there are large areas of land for which there are no ready alternative to farming, and it is unlikely that the land will go to zero value without it being in someone's interest to use those lands for farming.

Although media coverage has focused on problems of low price and income in regions such as Saskatchewan, the data show that Canadian farmers are not poor. Their net worth per farm of \$646,000 in 1997 (AAFC) exceeds the total value of farm capital on the average Canadian farm. It is difficult to believe that relatively wealthy farm operators, experiencing continuing increases in land values, are likely soon to leave the industry. Parts of Canada, including the western plains, will have a significant farming industry for some time. The physical and financial structures of those farms are undergoing basic changes, however. Unit sizes for commercial operations are increasing, some rapidly. A shift toward equity capital from outside the farm family is coming, contrary to a recent US prediction that family farms will continue to dominate the farm sector (Allen and Lueck 2000).

Finally, it may be that the very pressures that threaten agriculture today will ensure that some form of farming will survive in Canada. If it is uneconomic to restrict urban/industrial development in the Lower Fraser Valley of British Columbia, what is the economic rationale for restraining urban/industrial development in the European Union or other high-income countries with limited agricultural resources and many non-farm opportunities for their citizens? In many countries, there is resistance to changing the policy regime, although farm programs have permitted farmers to ascend to a new, policy-based aristocracy. Emerging freer trade in farm products provides at least some prospect of being able to rebuild an agriculture based on comparative advantage. That has not been the case with large parts of agriculture in most of the western world (Table 1). But freer trade will also affect Canadian farming, returning it to doing fewer things, focusing on what it can do well. But the Canadian farms will adapt more easily to freer trade as the rest of the world does as well.

So who will grow the food? In our judgement, the end is not near for farming in Canada, but the end is approaching for certain types of farming and for farming in certain areas. Our vision of farming in Canada in the next decades is this:

1. Much of the agriculture that takes place on expensive land near major urban centers will disappear. These types of agriculture are mostly a result of locational advantages or such institutional rigidities as marketing boards or land use restrictions, and these areas probably will not continue to produce farm products in an environment of borders open to trade, expanding skills of workers, and withering of barriers to change in land use. The impact of this on overall agricultural output will be slight, however, and the impact on the incomes of those involved will probably be slight or positive. Figures 1 through 4 indicate the

- products and the location of the future farm production. It will be in the Canadian prairies and areas further removed from large urban centers.
2. Similarly, there will be declines in agriculture, especially intensive agriculture, in areas where soil or climatic conditions are less suited to farming. Much of this land will see uses for purposes of recreation, resource extraction, or a range of low disturbance uses including grazing.
 3. It is on the large operations that agricultural products will continue to be produced. The end of public intervention in sectors such as dairy and egg production (Table 1) is likely to lead to declines in these sectors, perhaps (for eggs at least) their demise. For other sectors such as beef, pork and grains, the industries seem to be strongly competitive. Arguments have also been presented that the dairy industry in selected parts of Canada can be competitive. Future operations will be large, with a different asset and business structure than family farms of today. The current pig production model is one of professional management, sourcing capital from a variety of off-site investors (some of whom may be other farm operators), and establishing legal structures that are in some ways more flexible than those of family farms. For grain operations, it may be that technology (for example, geographic information systems, farm management consultants, high throughput harvest technology) allows professional management to operate those farms efficiently. For beef, the pattern may not shift much at the feeding level. This is already done in large feedlots, and many of the scale economies of current technology may have been exhausted. Until some of the limits, most notably waste management, can be dealt with, it seems unlikely that sizes will increase.
 4. The changes at the beef breeding level are more interesting. Beef production in Canada has always been based on use of waste resources – range lands that produce grass cheaply but have little other use, waste products of grain production, or farmland unsuited to grain production. There is likely to be some specialization in the sense that fewer landowners will own cattle, but owners of livestock will continue to seek out these low value resources that are supplementary or complementary to other kinds of activities. What we will observe are farmer-supplier alliances to manage the genetics in a much more controlled fashion than in the past.
 5. The agriculture that may be lost to Canada will be related to vegetables and fruit and similar products that seem to occupy the same space demanded by expanding non-farm populations.

Agriculture in Canada is evolving along recent patterns of larger, more specialized units. The changes in public policy of the past decade have created stresses for farmers, but part of that stress has come from feelings of political powerlessness associated with a new agricultural policy environment. Although Canadian farms seem to have defied the corporate model for a very long time, the end of the uniqueness of agriculture (Drury and Tweeten 1997) is probably at hand, at least in terms of farm family organization, farm size, and farm financial structure.

5. REFERENCES:

- Agriculture and Agri-Food Canada (AAFC). Farm financial indicators.
http://www.agr.ca/policy/epad/english/pubs/situat/1999/ffi_deck/power.ppt
- Agriculture and Agri-Food Canada (AAFC). 1999. Agri-Food System Overview.
<http://www.agr.ca/policy/epad/english/pubs/afodeck/reporte.ppt>
- Allen, Douglas W., and Dean Luek. 2000. Family Farm Inc. *Choices*. First Quarter: 13-17.
- Blank, Steven. 1998. *The End of Agriculture in the American Portfolio*. Westport, Conn.: Quorum Books.
- Bollman, Ray D., Leslie A. Whitener, and Fu Lai Tung. 1995. Trends and patterns of agricultural structural change: A Canada-U.S. comparison. *Canadian Journal of Agricultural Economics*. 43:Special issue: 15-28.
- Canadian Dairy Commission. 2000. *Dairy Farming: A Dramatic Evolution*.
<http://www.cdc.ca/farming.html>.
- Canadian Federation of Agriculture (cited as CFA). 1999-2000. Series of press releases on the farm crisis in Canada (<http://www.cfa-fca.ca> accessed June 8, 2000)
- Drury, Renee, and Luther Tweeten. 1997. Have farmers lost their uniqueness? *Review of Agricultural Economics*. 19:1:58-90.
- Farm Credit Corporation. *Farmland Values in Canada*. <http://www.sca-fcc.ca/> .
- National Farmers Union (cited as NFU). 2000. The Farm Crisis, EU Subsidies, and Agribusiness Market Power. Brief to Senate Standing Committee on Agriculture and Forestry. (<http://www.nuf.ca/feb17-brief.htm> date accessed June 8, 2000)
- Statistics Canada. <http://www.statcan.ca/english/censusag/apr26/can1.htm>.
- Statistics Canada. 1996 Census of Agriculture.

Table 1: Producer Subsidy Estimates Per Unit (US \$/tonne) 1998

Product	Canada	United States	European Union	Australia
Wheat	\$7.80	\$61.00	\$139.70	\$4.40
Oilseeds	\$14.30	\$24.00	\$248.20	\$4.30
Barley	\$4.30	\$49.00	\$170.30	n/c
Beef	\$107.90	\$95.00	\$3005.90	\$48.80
Pork	\$71.70	\$32.00	\$96.30	\$36.80
Poultry	\$51.70	\$29.00	\$147.20	\$39.60
Milk	\$195.20	\$215.00	\$197.20	\$61.60
Eggs	\$316.40	\$31.00	\$54.80	\$67.30

Source: Alberta Agriculture Food and Rural Development, from OECD PSE Database 1999.

**Table 2: Number Of Farms And Percent Of Farms By Size Category,
Recent census years**

Canada

Size in acres	1976	1981	1986	1991	1996
Less than 69	16%	18%	17%	17%	20%
70-179	25%	24%	23%	24%	23%
180-559	32%	30%	30%	28%	27%
560-1599	22%	22%	23%	22%	21%
1600 and above	5%	6%	7%	8%	9%
Total number	338,552	318,361	293,089	280,043	276,548

Western Canada*

Size in acres	1976	1981	1986	1991	1996
Less than 69	5%	6%	6%	6%	8%
70-179	13%	15%	15%	16%	17%
180-559	32%	28%	22%	25%	24%
560-1599	41%	40%	39%	38%	34%
1600 and above	10%	11%	14%	15%	17%
Total number	164,192	154,816	148,544	143,791	140,385

*Alberta, Saskatchewan and Manitoba

Source: Statistics Canada. Census of Agriculture. Various years.

Table 3. Average Size Of Farm In Canada And Regions, 1996

Region	Number of farms	Acres per farm	Crop acres per farm
Canada	276,548	608	363
Newfoundland	742	146	35
Prince Edward Island	2,217	296	217
Nova Scotia	4,453	237	85
New Brunswick	3,405	280	129
Quebec	35,991	237	150
Ontario	67,520	206	148
Manitoba	24,383	784	539
Saskatchewan	56,995	1152	656
Alberta	59,007	881	469
British Columbia	21,835	286	90

Source: Statistics Canada. 1997. Historical Overview of Canadian Agriculture. Catalogue no. 93-358-XPB

Table 4: Farm Operators By Level Of Schooling, Canada

Year	Number of Operators	Grade 9 or less	%	Post-secondary	%
1971	367,190	211,085	57	122,535	33
1981	318,365	111,165	35	123,260	39
1986	293,090	86,140	29	120,300	41
1991	280,043	56,569	20	96,895	35
1996	276,548	44,524	16	109,236	40

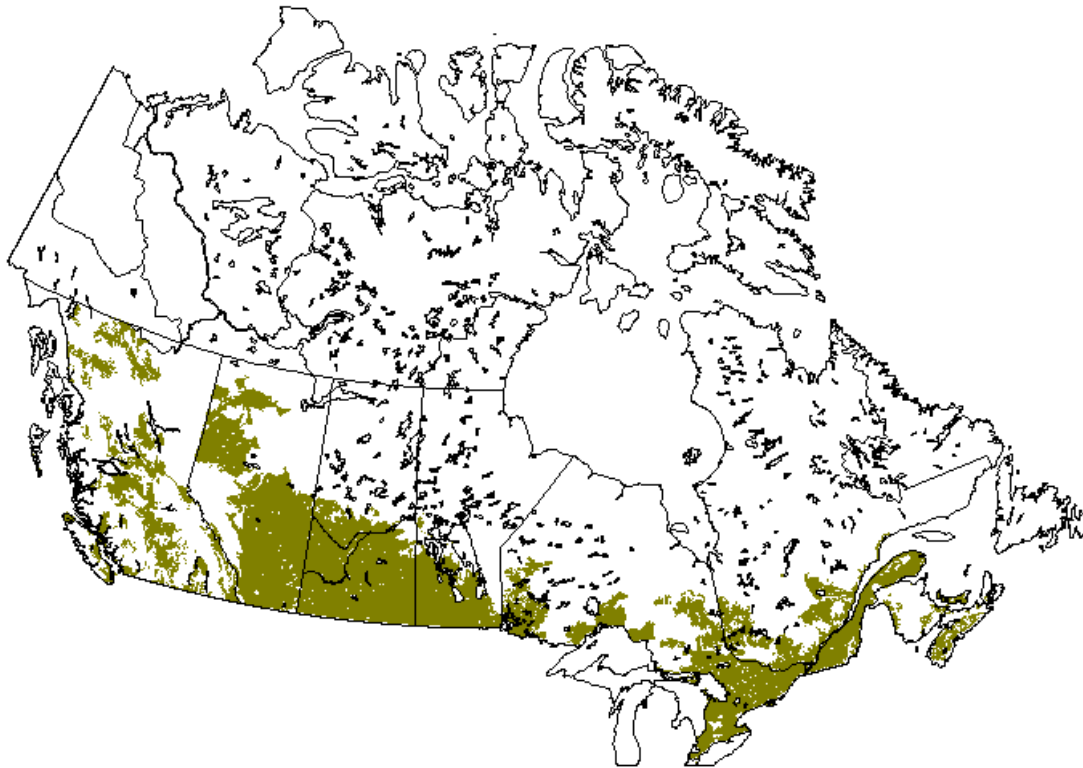
Sources: Census of Canada. Agriculture. 1986; and Census of Agriculture – Population.

Table 5: Structural Features Of Selected Agricultural Regions, Canada, 1996.

	No. of farms	Farms under 69 ac.		Reporting tractors		Reporting Pickup trucks		Reporting beef cows	Reporting hogs
		Percent	Percent	Average value (\$)	Percent	Average value (\$)	Percent	Percent	
Niagara, ON	3,147	69	92	23,468	68	9,621	8	2	
Fraser Valley, BC	2,549	85	80	29,347	69	11,970	18	3	
Swift Current, SK	3,848	2	88	53,160	89	16,215	31	1	

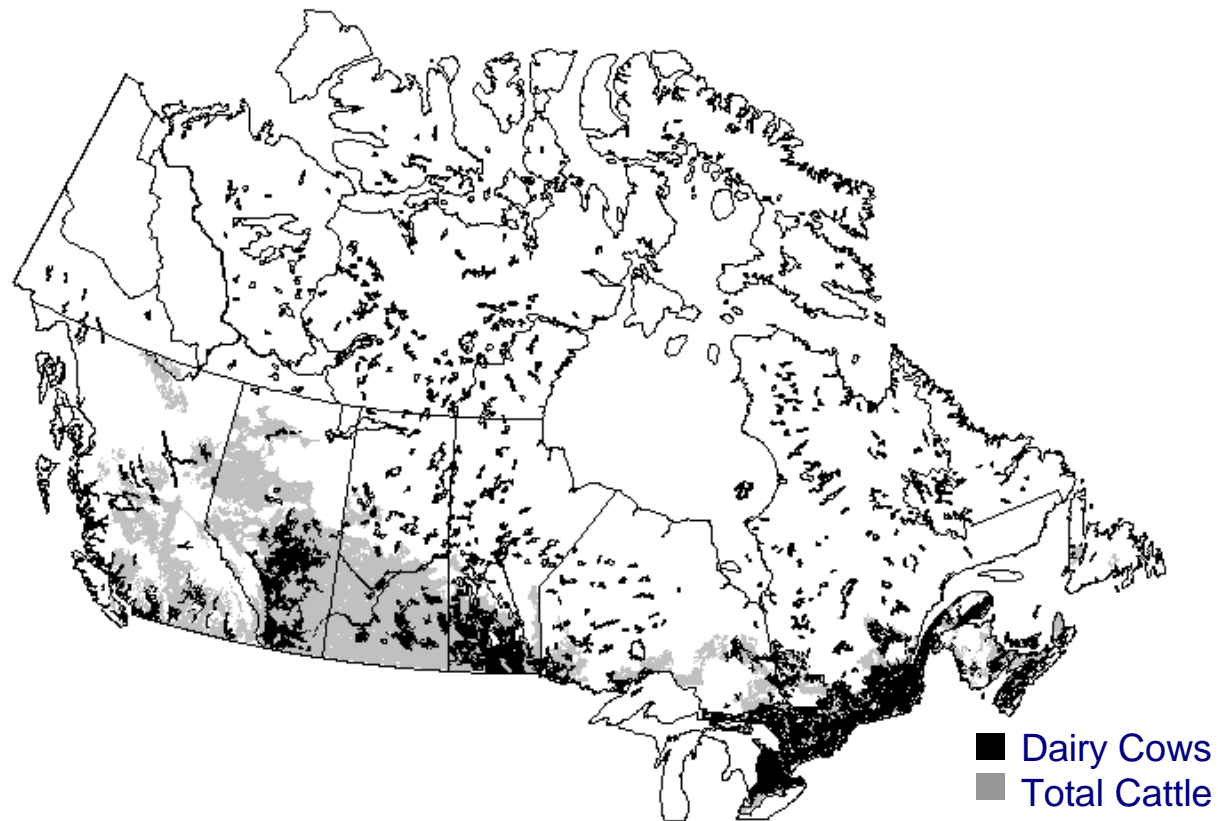
Source: Statistics Canada. 1996 Census of Agriculture.

Figure 1: Areas of Field Crops



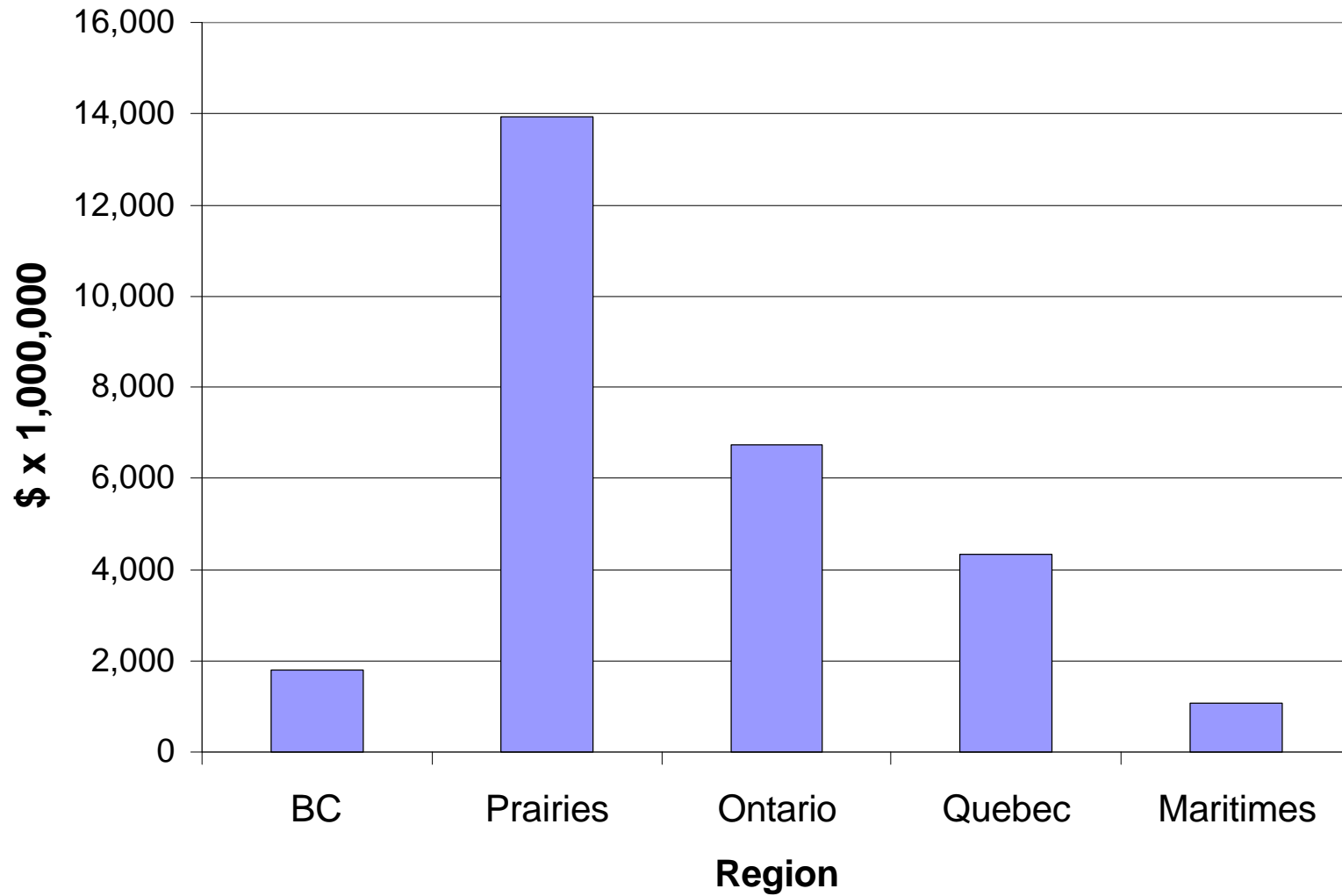
Source: AAFC Agri-FoodSystem Overview 1999. Reproduced From 1996 Census of Agriculture

Figure 2: Livestock - Total Cattle & Dairy Cows



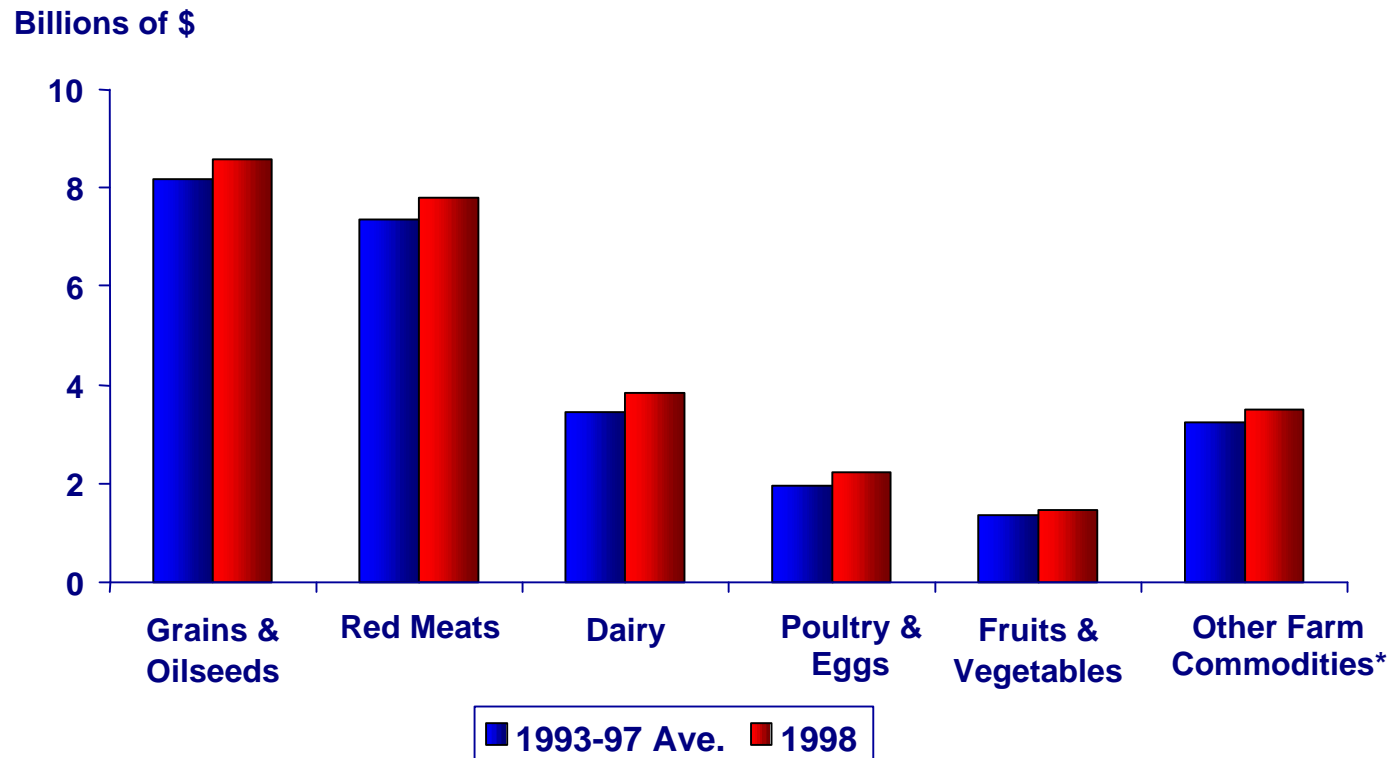
Source: AAFC Agri-Food System Overview 1999. Reproduced From 1996 Census of Agriculture

Figure 3: Canadian Farm Market Receipts 1999



Source: Statistics Canada Data Book 1999.

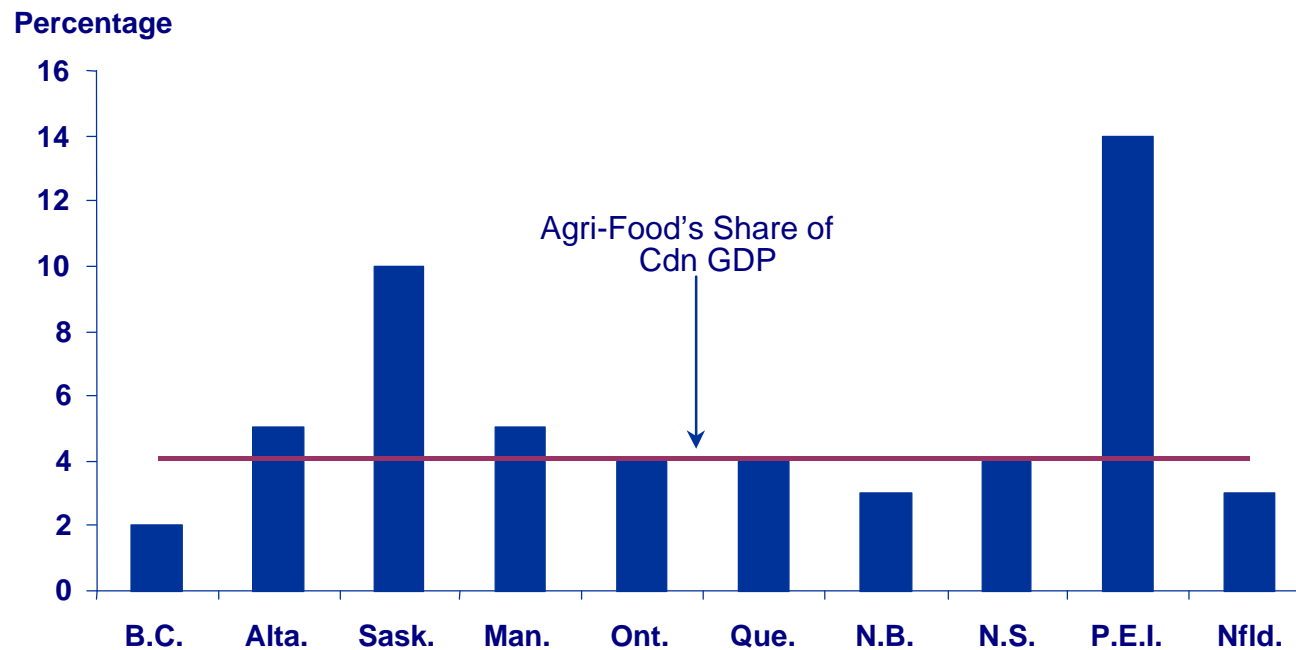
Figure 4: Canadian Farm Cash Market Receipts for Selected Commodity Groups



*Includes: Potatoes, Special Crops,

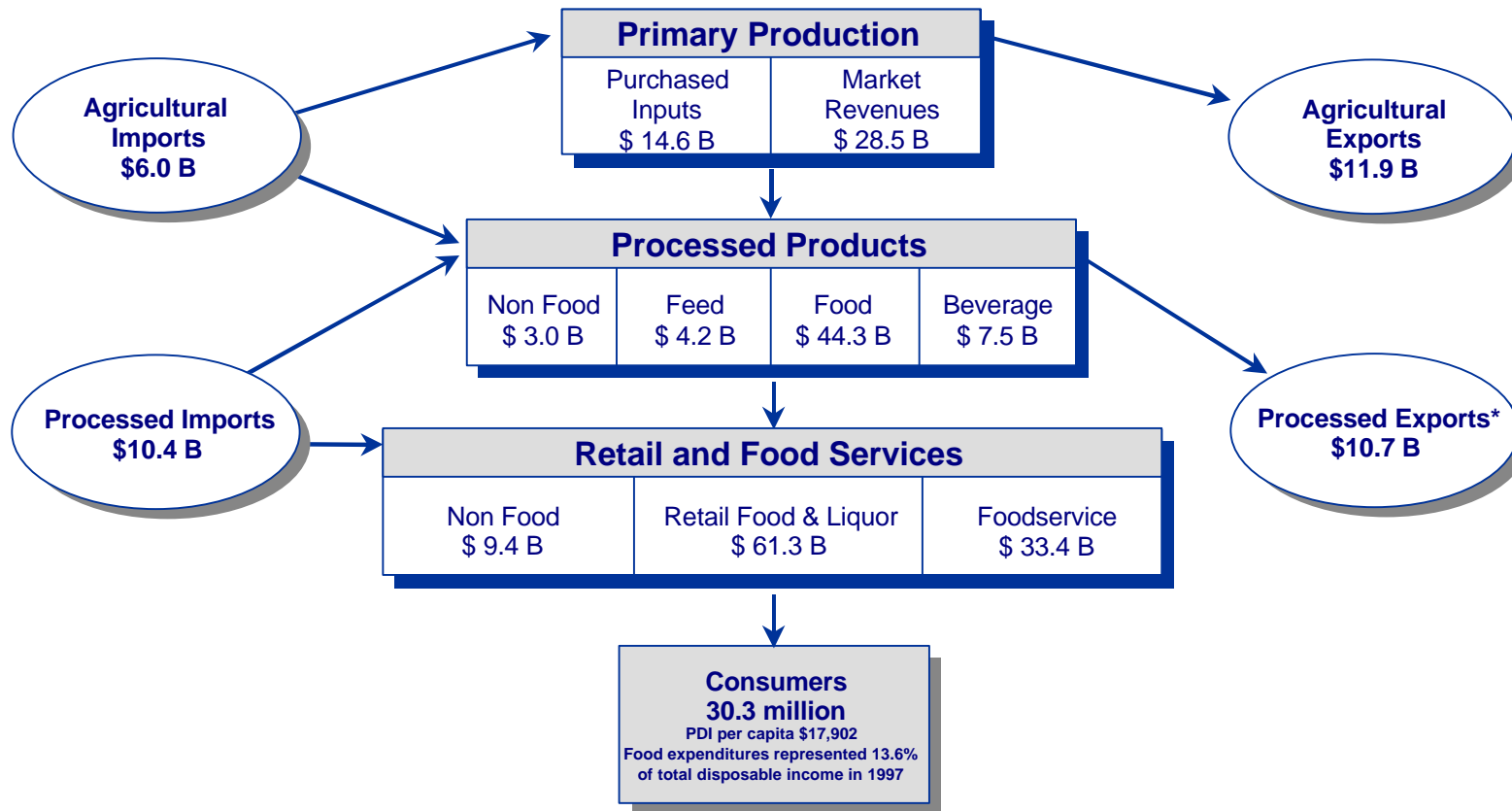
Source: AAFC: Agrifood System Overview 1999. Farm Income, Financial Conditions and Government Assistance Databook, March 1999.

Figure 5: Agri-Food Share of Provincial GDP, 1998



Source: AAFC Agrifood System Overview 1999: Conference Board of Canada.

**Figure 6: Canada
Agri-Food System Value of Production and Sales, 1998***

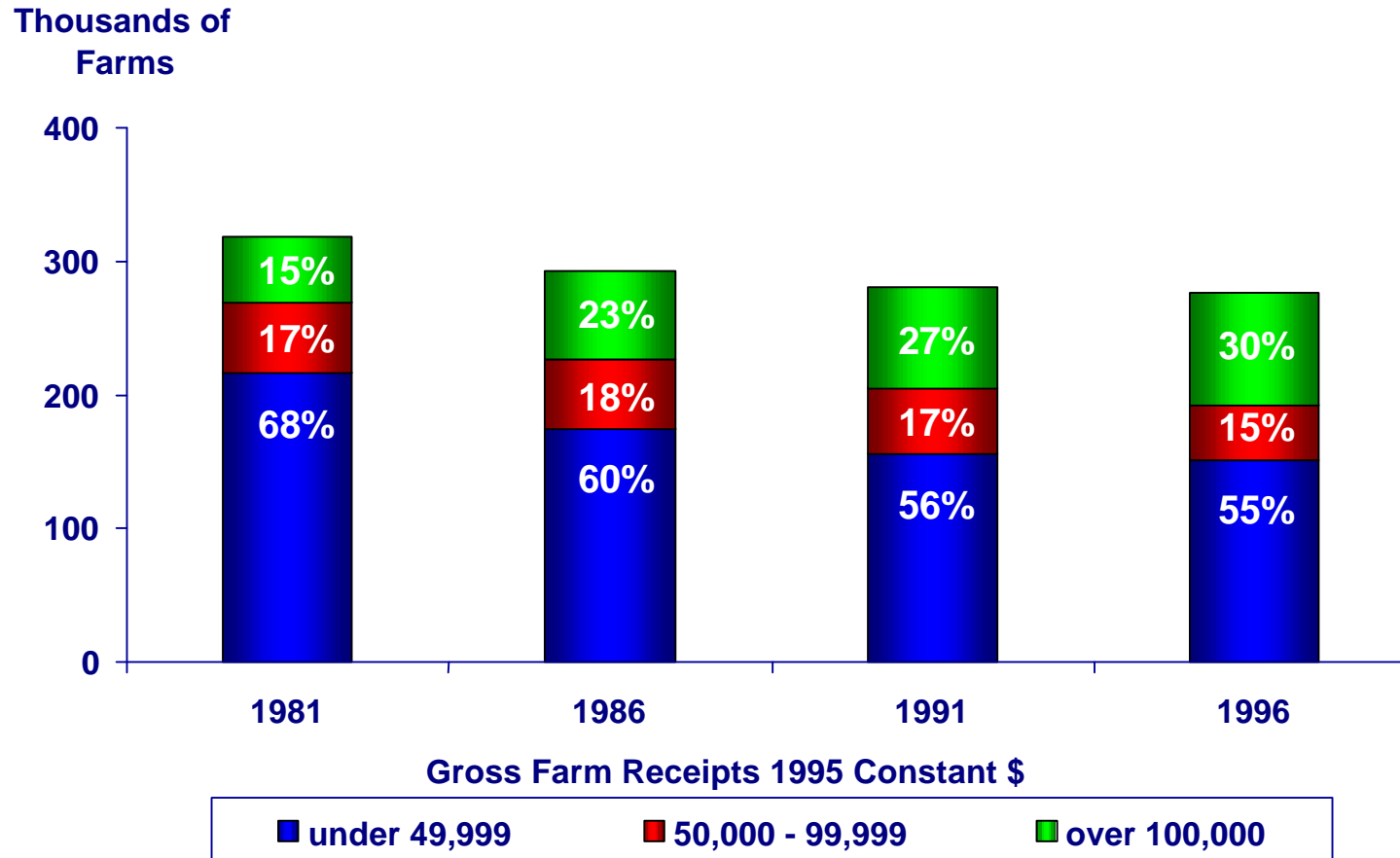


*Note: All 1998 numbers are estimates. Processed Exports includes a small component of Other Non-Food Exports consisting mainly of ethanol and linseed oil

Sources: Statistics Canada, Agriculture Economic Statistics, Canadian Restaurant and Foodservices Association, AAFC - Farm Income, Financial Conditions and Government Assistance Data Book, AAFC - Components of the Canadian Agriculture & Agri-food System, 1997, Trade Data Retrieval System.

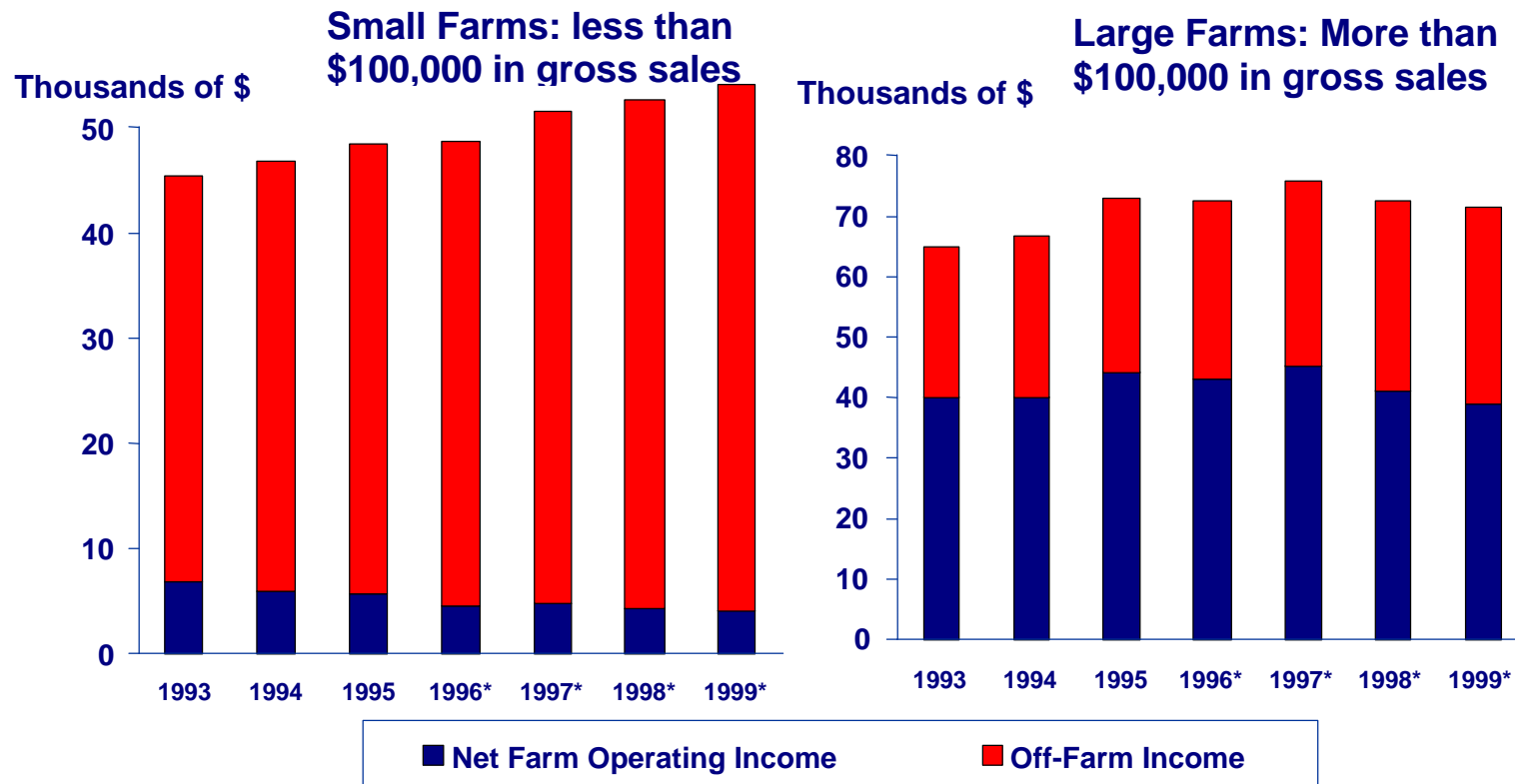
From AAFC: Agri-Food System Overview

Figure 7: Number of Farms by Revenue



Source: AAFC- Agrifood System Overview 1999. Statistics Canada, Historical Overview of Canadian Agriculture, 1996.

Figure 8: Average Family Income per Farm for Small and Large Farms



*Estimates based on AAFC income

Source: AAFC: Agrifood System Overview 1999. Statistics Canada, Whole Farm Data Base.

Figure 9: Canadian Direct Farm Support 1980-1999

Source: Statistics Canada - Cansim Database. Nominal Dollars

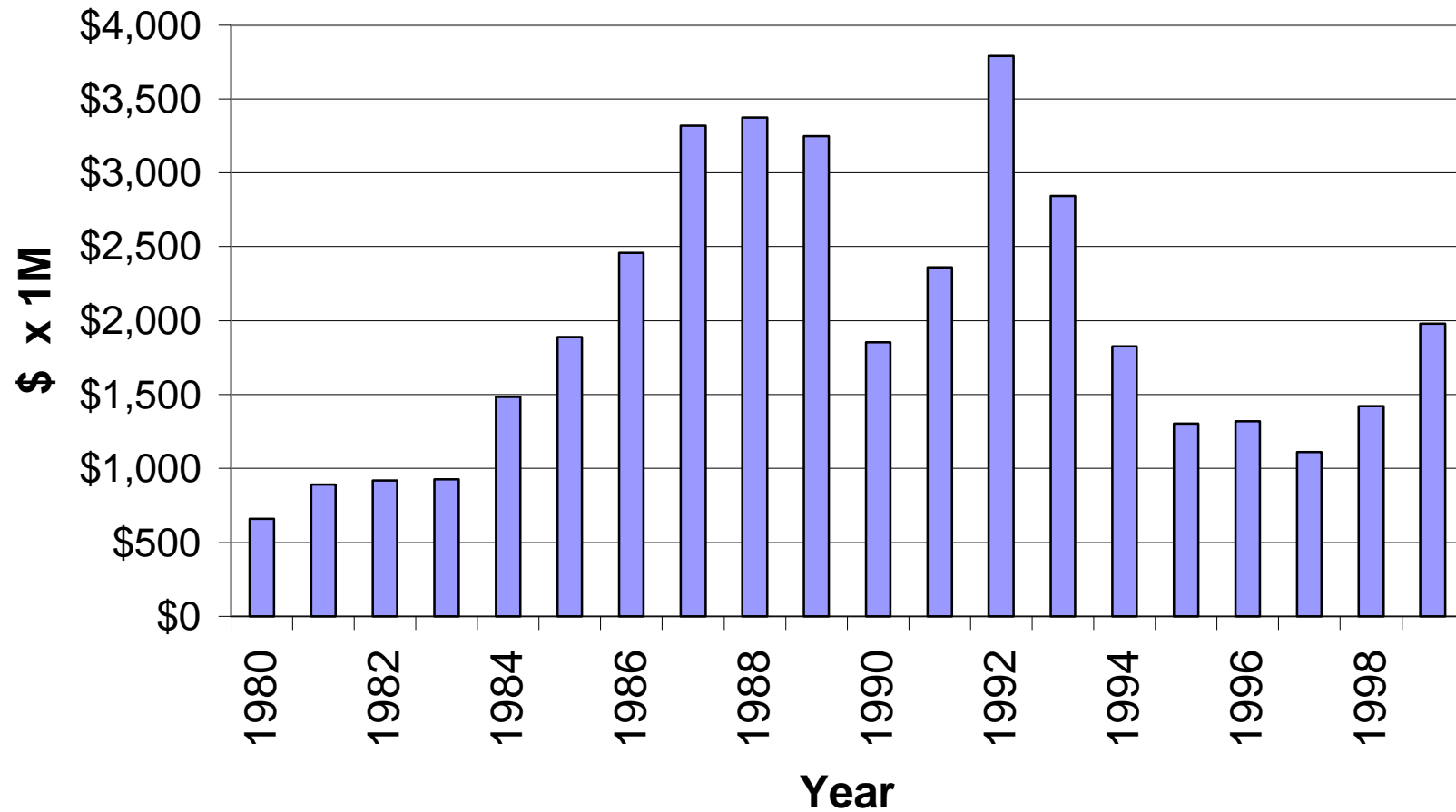
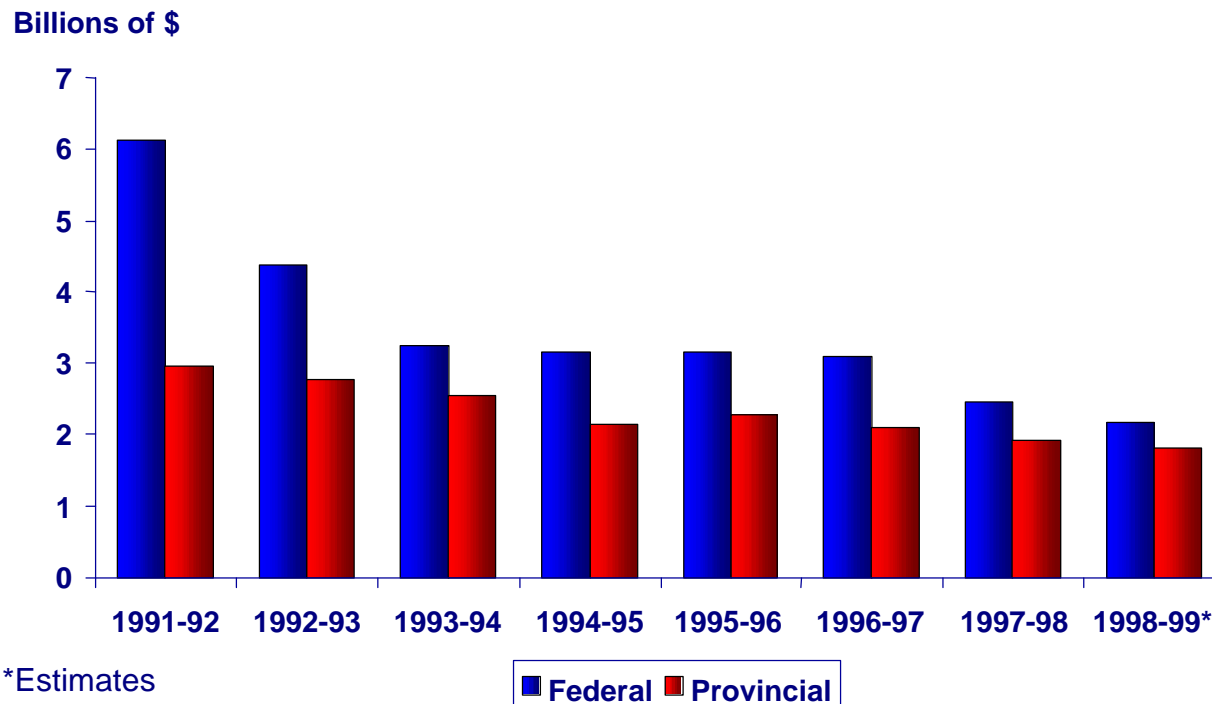
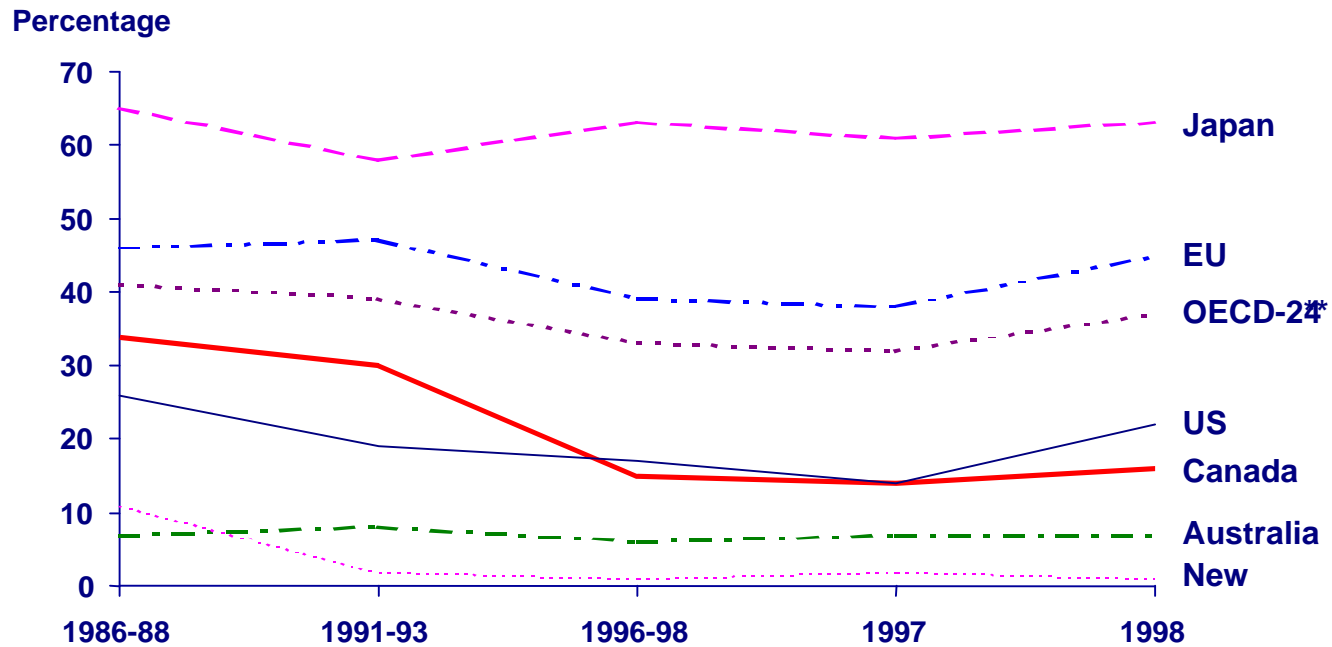


Figure 10: Government Expenditures in Support of Agri-Food System Includes Farms and Food Processing Sectors



Source: AAFC Agrifood System Overview 1999 - Farm Income, Financial Conditions and Government Assistance Data Book, March 1999.

Figure 11: Percentage PSE*, 1986-1998



* Percentage PSE is PSE (Producer Support Estimate) as a share of value of production plus
 **OECD-24 excludes most recent member countries Czech Republic, Hungary, Korea, Mexico and

Sources: AAFC: Agrifood System Overview 1999: Agricultural Policies in OECD Countries: Monitoring and Evaluation 1999.