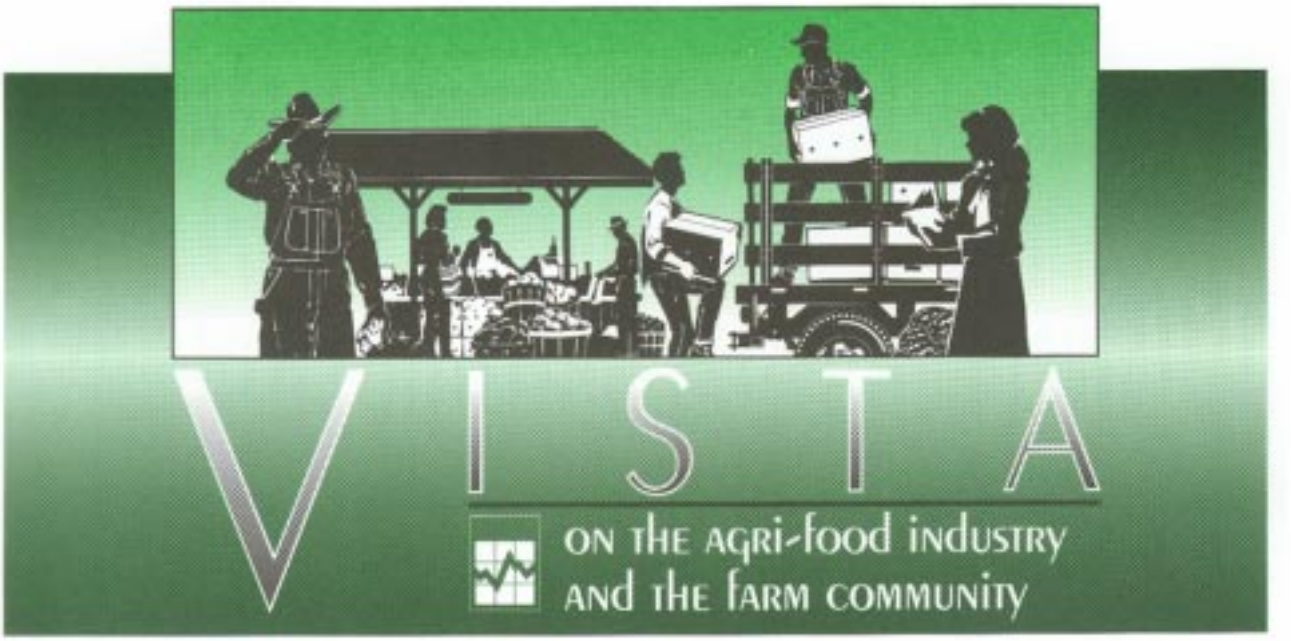


Catalogue no. 21-004-XIE
September 1999

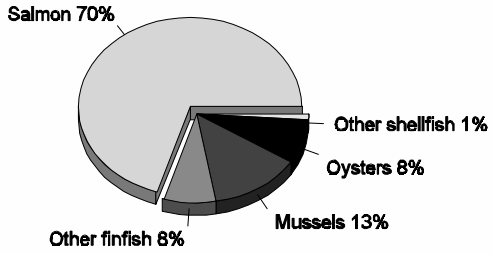
Gross output in aquaculture exceeds half a billion dollars annually

by Bernadette Alain

The development of aquaculture parallels the transition that occurred in agriculture several thousand years ago. Agriculture appeared when hunters and gatherers began to raise livestock and plant crops to produce food. The parallel transition with aquatic species is becoming an important activity in the Canadian economy. As a result of new initiatives, Statistics Canada is now able to provide economic data for the developing industry of aquaculture.

The term "Aquaculture" implies some form of human intervention in the rearing of fish or shellfish. It is more labour-intensive than fishing and provides a more uniform product than the wild fishery. Salmon are usually grown in land-based tanks in a freshwater environment to smolt size (where physiological changes allow them to adapt to salt water). They are transferred to seawater cages where they rapidly grow to market weight. Trout, on the other hand, may be entirely grown in a freshwater system. Shellfish is entirely grown in a saltwater environment, generally suspended on lines and immersed or laid on structures near the sea bottom.

Graph 1 - Salmon production dominates the industry



Canadian aquaculture is a growing industry with a gross output of $507 million in 1997. With product inputs of $329 million, the total gross value added was $177 million.

Most of the production is finfish, largely salmon (see Graph 1), and the industry is almost entirely situated on the east and west coasts. In fact, New Brunswick and British Columbia together account for 85% of the gross value added in 1997.

The sale of whole dressed fish generates the most revenue for aquaculture businesses; 63% of total operating revenue. The sale of fish eggs and live fish for grow-out and the sale of fish fillets together contribute another 15% to total operating revenue.

The largest product expense by far for the aquaculturalist is feed. Purchases of eggs and fish for grow-out come in second followed closely by fish purchases for processing. Salaries and wages is the most important primary input, accounting for about two thirds of the total.

The gross value added for an industry is conceptually the same as the gross domestic product (GDP). Although the aquaculture sector accounts for a relatively small portion of the national GDP, there is great interest in this sector for several reasons.

First, it is a growth industry. The production and value accounts show that from 1991 to 1997, aquaculture production increased by over 95% while value increased 51%.

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Note of appreciation

Canada owes the success of its statistical system to a long-standing cooperation between Statistics Canada, the citizens of Canada, its businesses and governments. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

Aquaculture defined

Under the North American Industrial Classification System (NAICS), the aquaculture industry comprises establishments primarily engaged in farm-raising finfish, shellfish, or any other kind of aquatic animal. These establishments use some form of intervention in the rearing process to enhance production, such as keeping animals in captivity, regular stocking and feeding of animals, and protecting them from predators.

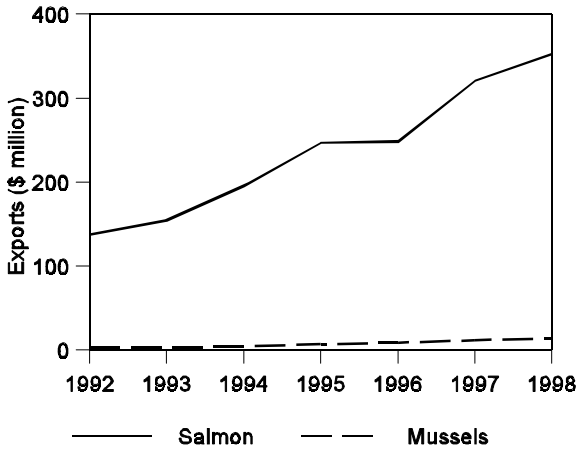
What are value added accounts?

The aquaculture value added account measures the value of the economic production of goods and services directly from aquaculture establishments. Economic production can be defined as any process that creates value or adds value to existing goods. Consistent with this definition, the Canadian System of National Accounts defines economic production as the production of goods or services that are exchanged for money in the market economy. Value added in aquaculture then is a function of the gross output (total operating revenue plus change in inventory value for goods) less product expenses.

Second, while not always important at the national level, its regional impact can be significant. Key examples include the salmon sites in the Bay of Fundy and the coastal areas of British Columbia as well as oyster culture in the Strait of Georgia and mussel farming around Prince Edward Island.

Exports, mostly to U. S. markets, have increased significantly over the last several years. The value of salmon exports jumped from $137 million in 1992 to over $350 million in 1998, while mussel exports increased from less than $3 million to over $14 million during the same period (see Graph 2).

Graph 2 - Aquaculture exports are growing



The federal government has made aquaculture a priority by appointing its first Aquaculture Commissioner.

Finally, aquaculture may be able to fill the gap left by the declining wild fish stocks and employment in the traditional fishery.

Statistics Canada programs continue to grow along with the industry, providing more detail and monitoring changes as they occur.

*The aquaculture economic statistics are collected in the **Unified Enterprise Survey (UES)**, a survey that incorporates several annual business surveys into an integrated framework. The pilot year for the new survey was 1997. The UES aims to ensure that*

Statistics Canada receives consistent and integrated data from many types and sizes of businesses, with enough detail to produce accurate provincial statistics.

*The financial data for the aquaculture industry is available in updates to the **Agriculture economic statistics binder (21-603-UPE)**.*

Questions or comments on this article may be addressed to Bernadette Alain at (902) 893-7251 or by E-mail at stctruro@ns.sympatico.ca.

Immigrant farm operators are still a vital part of agriculture

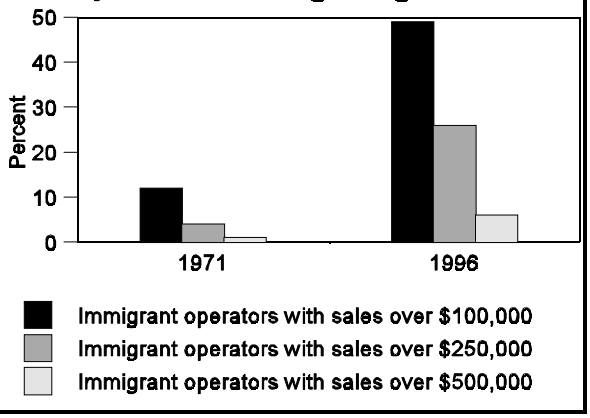
by Charlene Lonmo

The agriculture industry in Canada was built largely by immigrants. They arrived, mostly from Europe and Asia, as land grant settlers and homesteaders or as indentured or hired labour. Times have changed. Ninety percent of foreign born Canadians now live in the 15 largest cities. While many recent immigrants[1] still work in agriculture, increasingly they are entrepreneurs who are managing businesses of significant size.

Looking back to the 1971 census, most recent immigrants engaged in farming on a relatively small scale. About one in eight managed farms with sales of over $ 100,000 per year (measured in terms of 1995 dollars). The 1996 census , however, showed that almost half of the recent immigrant operators were managing enterprises with annual sales exceeding $ 100,000 (see Graph 1).

The 1971 census recorded 57,300 immigrant farm operators of which 54,800 were naturalized prior to 1961. The Great Depression and the Second World War interrupted the inflow as almost 60% were naturalized before 1931 and almost all of the remainder after 1946. Later arrivals (those naturalized after 1961), numbered 2,560 of which almost half claimed English as their mother tongue. Most of these came from the United States and Britain.

Graph 1 - More recent immigrant operators manage large farms

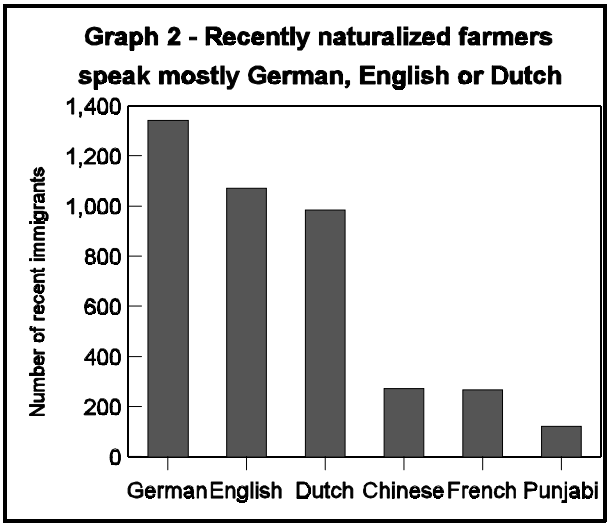


The current generation of immigrant farmers

Of the 4,570 landed immigrants who were naturalized between 1986 and 1996 and who went into farming, one-third were young (under 35), 57% were middle-aged (between 35 and 54 inclusive) and 10% were older (55 and over). These proportions are consistent with the earlier generation of recently naturalized farm immigrants.

Amongst recent immigrant farmers with larger farm operations (those with gross receipts over $250,000), one half chose to locate in Ontario, with Alberta, Quebec and British Columbia accounting for the vast majority of the other half.

[1] For the purposes of this article, "recent immigrants" mean those who were naturalized within the preceeding 10 years. For the 1971 generation of farmers this means they were naturalized between 1961 and 1971: for the 1996 generation, between 1986 and 1996.



The likelihood that an immigrant farmer was operating a business-type, as opposed to a hobby farm or lifestyle farm, varied significantly between the major language groups. Dutch-speaking immigrant farmers are most likely to operate a large farm as compared to other language groups and born-in-Canada farmers. French and German-speaking immigrants are also frequently engaged in large scale farming operations. English-speaking immigrant farmers, by contrast, tend to have smaller operations chosen for the lifestyle rather than the income.

The various immigrant groups often chose a type of farming that reflects the traditions of their homelands. Dairy operations have attracted many recent immigrants. In fact, almost one third of all recent immigrants have dairy operations. This compares to 11% of all born in Canada operators. French and Dutch speaking immigrants are most concentrated in this farm type with over 70% of French and over 50% of the Dutch speaking immigrants choosing dairy farming. Dairy operations are typically capital intensive requiring high up-front investment in equipment, livestock and quota. Not surprisingly, these operations tend to have higher gross income (three-quarters have gross receipts over $100,000 and over 20% have gross receipts over $250,000) and higher capitalization (over half have farm capital in excess of $500,000).

Beef cattle operators are by far the most numerous in Canada accounting for 26% of all farm operators overall compared to 11% for dairy operators. Amongst recent immigrant operators however, this relationship is reversed with 32% operating dairy farms and 14% operating cattle ranches. English and German speaking immigrants are most drawn to this type of operation with 22% of all English speakers and 18% of all German speakers operating cattle ranches. In addition, English and German speakers each respectively operate 38% of all cattle ranches operated by recent immigrants, accounting for almost three quarters of all immigrant operators of cattle ranches.

Horse and pony operations are also popular amongst the English, German and French-speaking immigrants. Horse and pony farmers constitute 6.1% of all born in Canada farm operators and 5.3% of immigrant operators.

Born in Canada hog farmers account for 3.2% of all born in Canada operators but amongst recent immigrants, hog farmers represent twice that number. The proportions are similar amongst egg and poultry operators also. Two percent of born in Canada farmers are egg and poultry farmers but 3.8% of recent immigrants have such operations. Similarly with sheep and lamb
and goat operations, immigrants are about twice as likely to operate these types of farms.

Amongst field crop operations; wheat, oilseeds and other small grains attract far more born in Canada farmers than immigrants. By contrast recent immigrants are disproportionately attracted to potatoes amongst all field crops.

Other crops that have attracted recent immigrants are fruits, vegetables and greenhouses where recent immigrants are at least twice as likely to run such an operation as a born in Canada farmer. Recent immigrants are more than ten times more likely to choose a mushroom operation as a born in Canada farmer. Amongst other crops, maple syrup operations remain popular with born in Canada operators much more so than recent immigrants.

*The data in this article was extracted from the **linked Censuses of Agriculture and Population** databases from 1971 to 1996.*

Comments or questions on this article may be addressed to Charlene Lonmo at (613) 951-6376 or by E-mail at charlene.lonmo@statcan.ca.

CURRENT CANADIAN AGRICULTURAL INDICATORS

	1998	1999	Percent Change
Crop Production July 31 Estimate (million tonnes)			
Spring Wheat (excluding durum)	16.8	19.4	16
Durum Wheat	6.1	3.9	-36
Oats	4.0	3.5	-13
Barley	12.7	12.7	-
Canola	7.6	8.3	9
Flaxseed	1.1	1.1	-
Dry Peas	2.3	2.1	-9
Cattle on Farms (million head)			
Total Cattle - July 1	14.7	14.5	-1
Calves Born - January-June	4.4	4.3	-2
Pigs on Farms (million head)			
Total Pigs - July 1	12.4	12.4	-
Sows Farrowed January-June	1.2	1.3	8
Sows to Farrow July-December	1.3	1.3	-
Milk Sold Off Farms (million kilolitres)			
January - June	3.8	3.8	-
Chicken Meat Production (thousand tonnes)			
January-June	390	423	8
Egg Production (million dozen)			
January-June	245	253	3
Planted Area of Fruit (thousand hectares)			
Apples	30.1	28.9	-4
Strawberries	6.1	5.6	-8
Blueberries	35.4	36.8	4
Grapes	7.7	7.5	-3
Planted Area of Vegetables (thousand hectares)			
Field Vegetables	114	113	-1
Potatoes	159	158	-1

	1998	1999	Percent Change
International Trade in Agricultural Commodities and Food (billion dollars)			
Exports January-June	12.4	11.3	-10
Imports January-June	8.3	8.5	2
Price Indexes			
CPI Food Component (1992=100) - July	110	111	1
Farm Cash Receipts (billion dollars)			
January-June	14.7	14.4	-2
Bankruptcies - Agriculture and related service industries (number)			
January-April	98	114	16
Manufacturing Shipments of Food (billion dollars)			
Total Value January-June	24.8	25.1	1
Retail Trade in Food Stores (billion dollars)			
Total Value January-June	28.1	28.6	2
Population (million persons)			
April 1	30.2	30.5	1
Employment (million persons)			
July	14.7	15.1	3
Raw Unemployment Rate (percent)			
July	8.5	7.8	-8

Scheduled Releases of Agricultural Information

September 1, 1999 through February 29, 2000

Field Crops

September 9 - Stocks of Canadian grain at July 31, 1999 (Cat. No. 22-002-XPB).
October 8 - September estimates of production of principal field crops by province for 1999 (Cat. No. 22-002-XPB).
December 3 - November estimates of production of principal field crops by province for 1999 (Cat. No. 22-002-XPB).

February 2 - Stocks of Canadian grain at December 31, 1999 (Cat. No. 22-002-XPB).

Grain Markets

September 29 - Cereals and oilseeds market statistics, monthly (Cat. No. 22-007-XPB).
October 28
November 26
December 21
January 28
February 29

Horticulture Crops

November 19 - Area, yield and production of potatoes by province for 1999 (Cat. No. 23-008-UIB).
January 21

February 25 - Area, production and value of fruit and vegetable crops by province for 1999 (Cat. No. 22-003-XIB).

November 13 - Production and value of honey and maple products by province for 1999 (Cat. No. 23-221-XIB).

Food Consumption

October 20 - Supply, disposition and per capita disappearance of oils, fats, fruits, vegetables, potatoes and fish for 1998 (Cat. No. 32-230-XPB/XIB).

Livestock and Animal Products

November 15 - Farm sales of milk for fluid and manufacturing purposes, production and stocks of
February 11 creamery butter, cheddar cheese and other dairy products by province, monthly (Cat. No. 23-001-QXPB/XIB).

October 22 - Inventories of pigs on October 1 by province (Cat. No. 23-603-UPE).
February 18 - Inventories of pigs, cattle and sheep on January 1 by province (Cat. No. 23-603-UPE).

Scheduled Releases of Agricultural Information

September 1, 1999 through February 29, 2000

Livestock and Animal Products (concl'd)

September 28 - Stocks of frozen meat products in Canada by type of meat product and
October 28 by province, monthly (Cat No. 23-009-XIE).
November 26
December 23
January 27
February 28

Poultry

September 20 - Stocks of frozen poultry meat by province, monthly (Cat. No. 23-603-UPE).
October 20
November 19
December 17
January 21
February 18

September 10 - Egg production and number of laying hens by province, monthly (Cat. No. 23-003-XPB).
October 8
November 12
December 10
January 7
February 4

Farm Income and Prices

November 25 - Farm cash receipts by province, quarterly (Cat. No. 21-001-XIB).
February 24

November 25 - Estimates of ten agricultural economic indicators for 1998: farm income, farm cash receipts, farm operating expenses and depreciation charges, the index of farm production, current values of farm capital, farm debt outstanding, the farm product price index, direct program payments, the agriculture production account and balance sheets (Cat. No. 21-603-UPE).

The Index of prices of commodities and services used in farm operations (Cat. No. 62-004-XPB) has been discontinued pending a redesign which should see an annual set of indexes for the year 1999 released in the early part of 2000.

Users may obtain these releases through the contacts listed below on the date of release. Much of the data is available in machine readable form in CANSIM at the same time. The publications will be available at a later date.

AGRICULTURE DIVISION CONTACTS

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Toll free telephone number: 1-800-465-1991

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Poultry and Cold Storage	Conrad Ogrodnick	(613)	951-2860
Field Crop Reporting	Oliver Code	(613)	951-8719
Grain Marketing	Karen Gray	(204)	983-2856
Horticultural Crops	Bill Parsons	(613)	951-8727
Potatoes and Furs	Barbara McLaughlin	(902)	893-7251
Farm Taxfiler Data	Bruce Orok	(613)	951-8722
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Aquaculture	Bernadette Alain	(902)	893-7251