

BC Dairy, Egg and Poultry Industries

Socio-economic impact of British Columbia's dairy, chicken, turkey, hatching egg and table egg industries

April 2009





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1 Executive Summary

In this report, we have examined the social and economic impacts of British Columbia's supply managed commodity industries and its associated value chain. Commodities include dairy, chicken, turkey, hatching egg, and table eggs. Together supply managed industries are referred to as the BC Dairy, Egg, and Poultry Industries (BCDEPI).

The supply management value chain encompasses the flow of production of milk, poultry, and egg products from the farm gate to processed and further processed activities that result in food products ready for consumption through wholesale or retail channels.

Economic Impact of the BCDEPI Value Chain

The BCDEPI value chain impacts the BC economy through direct expenditures on goods and services, the employment of workers and the generation of tax revenues for local, provincial and federal governments. These impacts are presented in Table 1.1.

Total value added generated by the BCDEPI value chain in British Columbia is estimated to be \$1.6 billion. It is estimated that the BCDEPI value chain generates employment of 28,375 FTEs with associated salaries and wages of \$893.7 million.

Table 1.1 BCDEPI Economic Impacts Summary Table

Impact	Direct (\$m)	Indirect (\$m)	Induced (\$m)	Total (\$m)
Output	2,340,712	2,402,602	257,478	5,000,792
GDP (value-added)	569,866	851,329	140,443	1,561,638
Wages & Salaries	285,026	522,385	86,308	893,720
Taxes	79,584	79,584	46,814	205,983
Impact	Direct (FTE)	Indirect (FTE)	Induced (FTE)	Total (FTE)
Employment	6,907	19,244	4,681	28,375

Highlights from the Economic Analysis

- **BCDEPI is a significant contributor to provincial GDP.** Economic output supported by the BCDEPI value chain is estimated to be \$1.6 billion in nominal GDP. BC Nominal GDP in 2007 was equal to approximately \$192 billion therefore, the estimated magnitude of the supply managed sector's GDP impact amounts to about 0.8% of the BC economy. In comparison, the pulp and paper manufacturing sector contributes approximately 1.0% towards provincial GDP.
- **BCDEPI is a significant contributor to provincial employment.** Economic activity generated by the BCDEPI value chain is estimated to support 28,375 jobs. With approximately 2.3 million people employed in BC at the end of 2007, the estimated employment impacts represent 1.2% of total BC employment. Employment in the BCDEPI value chain was comparable to that of the forestry and logging sector at 24,300 employed.

- **BCDEPI is a relatively stable industry.** Although contributions to GDP from the BCDEPI value chain may not be as large as other sectors, in contrast, BCDEPI experiences less volatility in response to changing market conditions. Similarly, members of the BCDEPI value chain experience a relatively stable employment base year after year in contrast to the forestry and logging sector. In 2008, forestry employment declined to 17,400 in response to volatility in global markets.
- **Producer price increases are less than inflation.** Producer prices received by farmers have increased less than the consumer price index. In British Columbia, CPI has increased on average 3.2% per year since 1980 while supply management producers have received increases ranging on average from 2.1% to 1.1% per year.

Highlights of Social Impact Analysis

- **Supply management operates in a cohesive manner.** Key sector initiatives are developed in a cohesive industry-wide manner that reflects the entrepreneurial nature of producers. The cohesive nature of the industry allows the industry to react in a timely manner to challenges whether they are economic, social, or health-related. While acting in a cohesive manner, the industry is also able to adapt quickly to innovation and changes in the market-place.
- **Supply management is responsive to change.** Supply management operates under a tightly organized structure that enables the industry to be responsive to external events that could impact the industry. Since the 2004 avian influenza outbreak, the industry, through the boards, has led important emergency initiatives around biosecurity and premise ID notification. Similarly, the boards have been active in working with producers to deliver critical programs such as on-farm food safety and animal care programs.
- **Members of the BCDEPI are located throughout British Columbia.** Dairy farms and processors are dispersed throughout the province. The Fraser Valley region is home to 67% of BC dairy farms, 17% are located in the Okanagan, 10% on Vancouver Island, 3% in the Cariboo, 2% in Creston, with the remaining 1% located in the Peace River region. Dairy processing and further processing plants are located in Metro Vancouver, the Fraser Valley, Okanagan, and Vancouver Island. Poultry producers and processors are located in the Fraser Valley, Okanagan and Vancouver Island.

2 Background and Study Purpose



2.1 Introduction

In Canada, the dairy, chicken, turkey, hatching egg and table egg industries operate under national supply management systems. These systems are administered by national bodies and by provincial commodity marketing boards that have been delegated powers by federal and provincial governments. Under the Canadian supply management system, the overarching goal is to match total supply of a commodity available with its market demand, thereby providing Canadians an adequate supply of the commodity at a reasonable price while providing Canadian producers a fair return on their operations.

In British Columbia (BC), the five supply-managed industries have formed a substantial part of the economic and social fabrics for well over one hundred years, with their contributions to local communities having been felt throughout the province. The purpose of this study was to measure the province-wide economic impacts and benefits produced by the industries as they stood in 2007 (the most recent year for which full data are available), and to examine the ways in which the industries continued their contribution to local communities.

2.2 Background and Study Purpose

BC Dairy, Egg and Poultry Industries (“BCDEPI”) is a partnership formed on behalf of British Columbia’s five supply-managed industries: the dairy, chicken, turkey, hatching egg and table egg industries. BCDEPI identified the need to undertake an analysis of the economic and social contributions of British Columbia’s supply management sector and engaged PricewaterhouseCoopers LLP (PwC) to conduct the study. PwC’s work on the study was led by its economics practice, which has conducted similar studies of other major BC industries.

The scope of the study included:

- Industry profiles – Development of a profile of each of the industries that describes the industry characteristics, including: volume and farm receipts, number of producers, employment and wages, investment and purchases, and industry value chain.
- Economic impacts and benefits – Analysis of the economic impacts and benefits produced by the industries, and calculation of the economic impacts for three commodity value chains: dairy, poultry and table eggs. For purposes of the economic impact calculations, each value chain includes farm production, processing and further processing. The calculation of the value chain for the five industries on an aggregated basis was also carried out that included the output, GDP, employment, wages and salaries, and taxes.
- Social Contribution – A description of how the supply-managed industries contribute to the social development within the province, and how the supply management system facilitates initiatives that involve farm safety, food safety, animal welfare, communities, and environmental performance.

2.3 Data Collection, Availability, and Reliability

For this study, we have used 2007 as our base year for measuring the economic impacts of the various industries as all required data for that year have been reported.

Data required to prepare the industry profiles and economic impact modeling were generally available. Our industry statistics were mainly sourced from Statistics Canada and the provincial and federal supply management marketing boards. Other data collected for the value chain analysis was obtained directly from companies that participate in the industry.

Information reported on social contributions to British Columbia was collected through interviews with representatives from the supply management boards, industry stakeholders, and government agencies. Additional material was collected through the review of publically-available articles and reports.

2 Background and Study Purpose

2.4 Organization of the Report

The remaining sections of the report are organized as follows:

- Section 3 provides a description of economic impact methodology
- Section 4 provides an overview of supply management nationally and in British Columbia
- Section 5 provides a profile of each of the supply management industries, together with a description of the economic impacts and benefits they produce
- Section 6 provides the summary results of the industry profiles and the aggregate results for the economic impact of the supply management value chain and other economic benefits
- Section 7 provides a description of the social contributions made by the supply management sector in British Columbia.
- Section 8 summarizes our findings.

2.5 Report Limitations

This Report is not intended for general circulation, nor is it to be published in whole or in part, without PricewaterhouseCoopers LLP (“PwC”) prior written consent. We do not accept responsibility for any losses arising from unauthorized or improper use of this Report.

PwC has relied upon the completeness, accuracy and fair presentation of all the information, data, advice, opinion or representations obtained from public sources and the Client (collectively, the “Information”). The findings in the Report are conditional upon such completeness, accuracy and fair presentation of the Information. PwC has not verified independently the completeness, accuracy and fair presentation of the Information.

PwC reserves the right, at its discretion to withdraw or make revisions to the Report should PwC be made aware of facts existing at the date of the report which were not known to PwC when it prepared the Report. The conclusions and recommendations are given as of the date hereof and PwC is under no obligation to advise any person of any change or matter brought to its attention after such date, which would affect the findings and conclusions and PwC reserves the right to change or withdraw the Report.



3 Economic Impact Analysis Methodology



3.1 Economic Impact Methodology

Economic impact modelling utilizes information in what are called Input-Output accounts to predict how an increase in demand for the products of one industry will impact on other industries and therefore on the entire economy. The BC Input-Output accounts reflect the underlying industrial structure of the entire BC economy in terms of who makes what and who uses what. In principle, the model contains the recipes for every output of the economy.

Economic impacts are generally categorized at the direct, indirect, and induced levels. Direct impacts are changes that occur in “front-end” businesses that would initially receive expenditures and operating revenue as a direct consequence of the operations and activities of a facility. Indirect impacts arise from changes in activity for suppliers of the “front-end” businesses. Induced impacts arise from shifts in spending on goods and services as a consequence of changes to the payroll of the directly and indirectly affected businesses.

Estimating direct, indirect and induced economic impacts is generally done through the use of so-called Input-Output multipliers. These multipliers summarize the impact of an exogenous event or shock on a set of macroeconomic quantities. Each of these quantities is described below.

- **Output** is the total gross value of goods and services produced by a given company or industry measured by the price paid to the producer (versus the price paid by the consumer, which can include transportation and retail mark-ups). This is the broadest measure of economic activity.

- **Gross Domestic Product (GDP)**, or value-added refers to the additional value of a good or service over the cost of inputs used to produce it from the previous stage of production. Thus GDP is equal to net output, or the difference between revenues and expenses on intermediate inputs. It is the incremental value created through labour or mechanical processing. Total GDP is a more meaningful measure of economic impact, as it avoids double counting during each round of impacts.
- **Employment** is measured in terms of full-time equivalents (FTEs).
- **Labour income** is a measure of earnings by FTEs. Labour income includes direct wages and salaries, as well as supplementary labour income and mixed income. Supplementary labour incomes are expenditures by employers on their labour account which are regarded as compensation of employees. They include contributions to employment insurance, private and public pension plan contributions, and retirement allowances. Mixed income is a balancing item in the industry accounts of input-output accounts representing the return to both self-employed labour and capital of the unincorporated business. Mixed income consists of earnings of proprietors of unincorporated businesses (sole proprietorships and partnerships) such as retailers and consultants, earnings of independent professional practitioners such as lawyers and dentists, net (after expenses) rental income of owners of real property and the accrued net farm income of farm operators.
- **Government revenues** arise from personal income taxes, indirect taxes less subsidies (e.g. sales tax), corporate income taxes, and natural resource royalties.

Estimating the impact of the value chain

It is important to note that this study is estimating economic impacts across an industry value chain. Therefore, the supply management industries are themselves interrelated as the output or production of some industries represents an input for other industries. For example, broiler hatching eggs represent an input into hatchery production, which is in turn an input into chicken production, which is in turn an input into poultry processing. This creates a complication in measuring economic impacts because the direct impact of one industry is implicitly included in the indirect or multiplier effects of an industry to which it is a supplier.

We have therefore carefully traced impacts throughout the value chain to ensure there has been no double counting of estimated economic impacts. The economic impact estimates for each of the BCDEPI commodities is presented in Appendix E.

For purposes of calculating the economic impact estimates for the respective value chains, we have defined the value chain to include producers, primary processors and further processors.

3 Economic Impact Analysis Methodology

3.2 Economic Benefits

In contrast to economic impacts, there may be other economic benefits that are difficult to quantify but result in long-term or downstream activity that would not normally be captured in economic impacts. While economic impacts use standard measures that can be estimated for nearly any type of industry, economic benefits and their accompanying measures may vary greatly from industry to industry.

Economic benefits may include:

- Creation of business partnerships
- Leveraging of additional funds
- Training opportunities for new workers
- Retention of existing workforce.

3.3 Data Sources

Provincial industry multipliers were obtained from both Statistics Canada and BC Stats. While the data sets are based on common underlying data, Statistics Canada data contains a higher disaggregation of industries than BC Stats (285 versus 66). However, BC Stats includes induced effects and government revenues for all three levels of government, which are not included in the Statistics Canada data. For this reason, both sets of multipliers were employed in this study in an effort to produce a wider range of economic impact estimates.

Additional data was obtained from CANSIM, which publishes values based on farm cash receipts for producers, or value of shipments for processors.

The list of industry multipliers and data sources used for the study is presented as Appendix B.

4 Overview of the Supply Management Sector in British Columbia



4 Overview of the Supply Management Sector in British Columbia

4.1 About Supply Management in Canada

Canada's dairy, chicken, turkey, hatching egg and table egg industries operate under national supply management systems. These are the only supply managed commodities in Canada. The supply management system is a marketing system administered by national bodies and by provincial commodity marketing boards that have been delegated powers by federal and provincial governments.

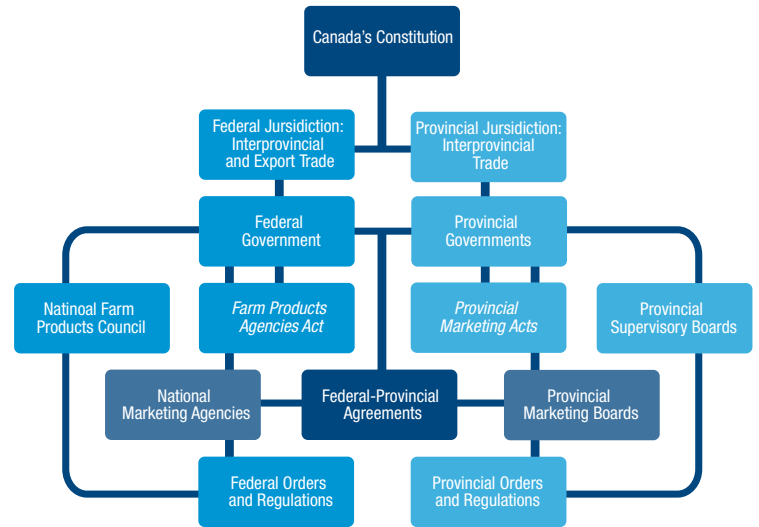
In response to highly volatile markets during the 1960s, the Canadian market would regularly have an overabundance of agricultural products triggering a sharp decline in producer prices. To ensure the survival of Canadian farms, at that time, the government would often buy back surplus production, resulting in substantial costs to public treasuries.

In order to avoid such public expenditures, the federal and provincial governments and agricultural producers implemented a supply management system, a production management model based on collective marketing and production planning. Products under supply management are mainly intended for the domestic market and not for export.

Today, supply management is governed by provincial and federal legislation as well as federal-provincial agreements. Under federal-provincial agreements, national marketing agencies estimate the annual demand for a product and allocate the demand among participating provinces based on historical provincial allocations. National marketing agencies also control inter-provincial and export trade and in some commodities may operate surplus removal programs.

National supply management systems are based on production management, import controls, and pricing policies for producers.

Figure 4.1 The Structure of Supply Management in Canada



Source: National Farm Products Council

4.2 Supply Management in British Columbia

In British Columbia, a marketing board or commission negotiates and administers the price and provincial allocation on behalf of their respective commodity. In British Columbia, the *Natural Products Marketing Act* provides authorization to the marketing boards and commissions to administer programs for the promotion, control and regulation in the province of the production, transportation, packing, storing, and marketing of the supply-managed commodity.

The supply management system is calibrated to ensure that demand meets supply. Prices are negotiated based on producer costs and the provincial allocations are negotiated based on forecasted demand. Controlling price and allocation is intended to avoid large swings in supply and demand that could affect the food supply and farm viability. Under this system, processors receive signals from wholesale or retail distributors based on consumer preference. In the situation where consumer demand increases beyond negotiated production quotas, product is then imported from other provinces.

Producers and processors are closely integrated and the supply management boards and commissions are responsible for facilitating these relationships so they work smoothly. Coordination of the many interlinking activities and good working relationships are essential to ensure the delivery of safe food products to the consumer. Supply management has evolved into a tightly integrated structure that is well organized to manage commodity food production throughout the province. The strength of this structure has been demonstrated in response to events such as avian influenza (AI) outbreaks and occasional spring flooding in the Fraser Valley.

Not all demand is met by supply produced within British Columbia. In each commodity industry a percentage allocation is imported from other provinces or countries. Under supply management, both raw and processed products may move inter-provincially while the percentage of imports is largely pre-determined by a trade agreement. Even though the federal government supports supply management, it also maintains support for open markets and increased trade opportunities. Because of the trade policy focus, the supply management system has undergone increased international pressure to allow more imports. At this time, trade negotiations on agriculture occurring through the World Trade Organization could impact Canada's and as a result British Columbia's supply management system.

BC FIRB 2004 Policy

The BC Farm Industry Review Board (BCFIRB) provides oversight for all marketing boards and commissions in the province. Each board is granted authority to make orders, rules and regulations deemed necessary to carry out the objectives of the supply management system.

In 2004, the BC Minister of Agriculture, Food and Fisheries released the *Regulated Marketing Economic Policy* that provides the objectives for the supply management sector. In releasing this document, the Ministry recognized the contribution the commodity sectors made to the economy of British Columbia. The document outlines the provincial government's responsibilities to oversee the sectors and the policy direction for the marketing boards to follow to ensure economic growth and development of the sectors to ensure their long term viability.¹ Under the policy, the provincial government has responsibility to support producers in the national supply management system during national and regional negotiations.

1. Regulated Marketing Index, BC Ministry of Agriculture and Lands.

5 Industry Profiles of Supply Management



5.1 British Columbia Dairy Industry

Overview

- In 2007, there were 572 dairy farms in British Columbia producing about 632 million litres of milk and generating \$424.2 million in farm cash receipts
- Dairy producers account for about 17.6% of total farm cash receipts in British Columbia
- In addition, dairy producers also receive about \$55.7 million annually in dairy cattle sales to the beef industry
- Dairy producers generated approximately \$121.1 million towards provincial GDP employing an estimated 4,362 workers representing 12.0% of BC agriculture jobs.

Dairy Industry Value Chain

- Approximately \$2.4 billion is generated by the dairy industry value chain in economic output contributing an estimated \$767 million to GDP
- An estimated 7,000 jobs are supported directly by dairy producers (4,362) and processors (2,618), with a further 6,240 in related industries
- About \$100 million in municipal, provincial and federal taxes are generated directly and indirectly by the dairy industry value chain

Supply Management in the Dairy Industry

Provincial

Supply management in the dairy industry is achieved by balancing milk production from provincial farms with local consumption of dairy products. Each province is responsible for the production of fluid milk, setting quota policies, pricing formulas, and other regulations, while the federal government has jurisdiction over the industrial milk market. Each province allocates its respective share of the Market Share Quota (MSQ) to its producers according to its own policies. British Columbia's raw milk production is sold as part of the Western Milk Pool with Alberta, Saskatchewan, and Manitoba. The price received by producer's for raw milk is based on the calculation of three components: consumer price index (30%), disposable income (30%), and an efficiency factor, the average cost of production of least-cost producers (40%).

In British Columbia, three organizations are responsible for the production, delivery, and marketing of milk under the supply management system: BC Milk Marketing Board (BCMMB), BC Milk Producers Association (BCMPA), and BC Dairy Foundation (BCDF).

The BC Milk Marketing Board is the regulatory agency responsible for regulating the province's milk production and marketing. BCMMB has the authority to promote, control, and regulate the province's milk production and marketing by allocating milk quotas to producers, administering the provincial share of the national industrial quota, and licensing all producers, processors, and transporters of milk, fluid milk and manufactured milk products within British Columbia.

The BC Milk Producers Association represents the dairy producers in the province and is responsible for policy development, crisis management, animal welfare, advocacy, environmental issues, trade policy and communications with industry members and affiliates. All dairy producers are members of BCMPA. The Association is a member and financial supporter of the Dairy Farmers of Canada (DFC).

The BC Dairy Foundation is responsible for developing and executing fluid milk marketing initiatives and promotion programs, delivering nutrition education programs to schools and the public, administering the school milk program, organizing public events and dairy programs at fairs and dealing with all dairy related public relations and media. BCDF is a member and financial contributor to the DFC.

Federal

The Canadian Dairy Commission is a Crown corporation established in 1966. Its mandate is to coordinate federal and provincial dairy policies thereby creating a control mechanism for milk production. It also monitors national production and demand and recommends the necessary adjustments to the national production target (MSQ) set by the Canadian Milk Supply Management Committee (CMSMC) for industrial milk.²

Dairy Farmers of Canada is the national organization representing the interests of all dairy producers in Canada. DFC's mandate includes national market development and promotion of industrial milk products (such as cheese and butter), industry advocacy with governments, lobbying on national regulations, trade policy and other national policy issues.³

2. Market Share Quota is the national milk production target for industrial milk in Canada. For July 31, 2008 British Columbia share of the MSQ was 5.9%.

3. Dairy Farmers of Canada, www.dairygoodness.ca

Volume and Farm Receipts / Revenues

In 2007, British Columbia dairy farms produced 632.3 million litres of milk valued at \$424.2 million.⁴ BC dairy production expanded 3% from 2001 to 2007 despite a 14% decline in the number of farms producing milk. Moreover, average milk production per farm in British Columbia increased from 873 thousand litres of milk in 2001 to 1,105 thousand litres of milk in 2007. This increase in absolute and average production suggests that BC dairy farms have become more efficient.

Dairy cattle herds are periodically culled for older heifers and with male cattle are sold as beef cattle. Sales of dairy cattle represent approximately 20% of cash farm receipts of the beef cattle industry or \$55.7 million.⁵

In 2007, the production value of BC dairy farms represented 8% of Canadian milk production, behind Ontario and Quebec. Dairy production is BC's top agriculture industry accounting for 17.6% of all farm cash receipts in the province (Figure 5.1).

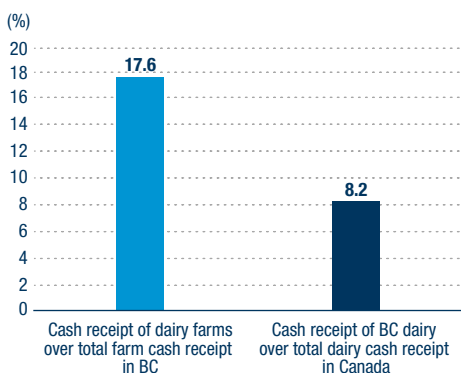
Dairy producers in British Columbia supply two main markets, fluid milk and industrial dairy products. The fluid milk market represents approximately 59% of milk production, while the remaining 41% is manufactured into dairy products. Between 2002 and 2007, dairy production (in litres) in British Columbia grew 1.0% per year, while total farm cash receipts grew 2.8% per year (Figure 5.2).

Although milk production in British Columbia has increased slightly, the per capita disappearance of fluid milk has decreased at a faster rate compared to

the national average likely due to the increasing flow of packaged milk into BC from other provinces (Figure 5.3)⁶. In 2007, British Columbia per capita disappearance of fluid milk was 77.4 litres, a 16.3% decline since 1999 when per capita disappearance was 84.0 litres. Nationally, the decline in consumption between 1999 and 2007 was 5.1%. More recently, consumption of other milk products such as yogurts, cheese, and other cream products have increased over the same time period.⁷

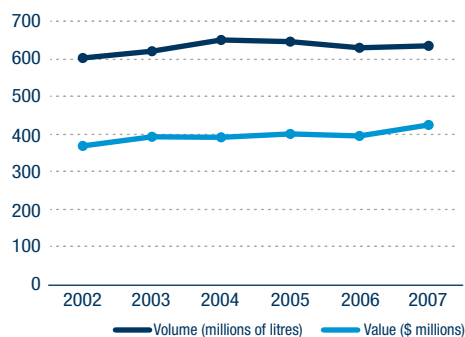
Milk consumption by consumers directly affects the amount of milk BC dairy farmers produce each year. BC dairy producers adjust milk production volumes by producing enough fluid milk to satisfy demand. Where differences exist between the volume produced and final consumption

Figure 5.1 Relative Size of the Dairy Industry in BC and Canada, 2007



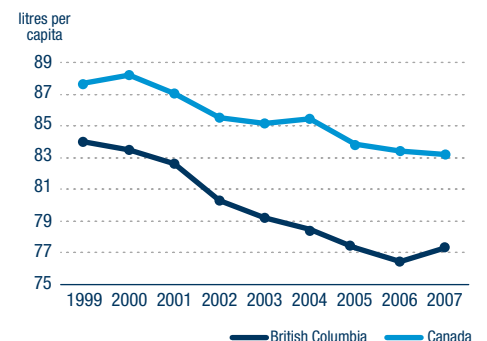
Source: Statistics Canada

Figure 5.2 Volume and value of dairy production in BC



Source: Statistics Canada

Figure 5.3 Per Capita Disappearance of Fluid Milk



Source: Canadian Dairy Information Centre

it can be explained by interprovincial trade, retail and merchandising strategies and the changing composition of processing and retail companies.

The demand for dairy products is influenced by consumer preferences and prices. Figure 5.4 illustrates the price received by dairy producers for milk production has increased 2.1% per year, while inflation over the same period increased 3.2% per year.⁸ This implies that BC farmer's incomes related to milk production has not increased as fast as the province's cost of living. This also suggests that food price increases have mostly occurred further along the value chain, during processing, distribution and at retail.

Number and Location of Dairy Producers

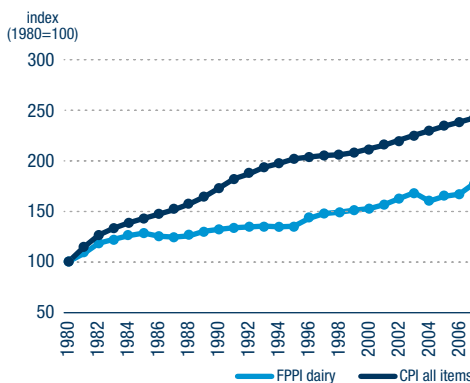
In 2007, there were 572 dairy farms in BC and according to the BCMMB, the Fraser Valley region is home to 67% of BC dairy farms, 10% are located on Vancouver Island, with the remaining 23% spread throughout the BC Interior.

In 2007, the BC dairy industry had over 70 thousand dairy cows, 72% in the Fraser Valley, 18% in the BC Interior, and 9% on Vancouver Island. The average herd size in British Columbia was 123 cows plus additional replacement calves and heifers compared to the national average of 72 cows. In British Columbia, the majority of dairy farms (53%) have less than 100

milking cows (small size farms), 31% have between 100 and 199 milking cows (medium size farms), and only 16% of dairy farms have more than 200 cows (large size farms).

In contrast, farm gate sales of milk in British Columbia are dominated by large dairy farms. Large farms account for 45% of farm gate sales in the province and 80% of them are located in the Fraser Valley. The average net operational revenue of a dairy farm in British Columbia is approximately \$73.2 thousand dollars.⁹

Figure 5.4 BC Consumer Price Index (CPI) and Farm Product Price Index (FPPI) for Dairy, 1980=100



Source: Statistics Canada

Figure 5.5 Dairy Farm Distribution by Region

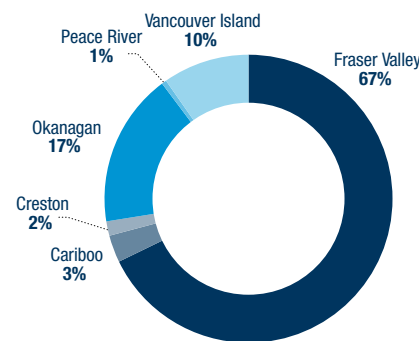
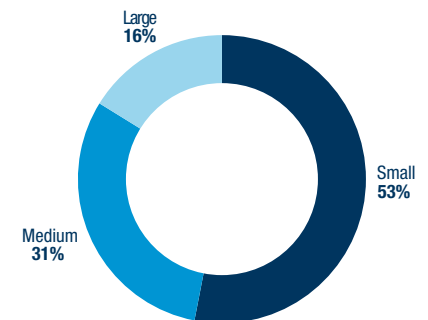


Figure 5.6 Dairy Farm Distribution by Farm Size



4. Sales at farm gate
 5. The 20% figure used to attribute cattle revenues to the dairy industry is an estimate that was negotiated between the BC Cattlemen's Association and the BC Milk Producers Association for purposes of the annual assessment undertaken by the BC Agriculture Council.
 6. Per capita disappearance is a proxy for per capita consumption as data for the interprovincial movements of final products is not available to make a definitive per capita consumption calculation.
 7. Food Statistics, Statistics Canada, Catalogue no. 21-020-X, 2007.
 8. Measured through CPI, which is the rate of price change for goods and services.
 9. Operational Revenue=Farm Cash Receipts-Production Cost

5 Industry Profiles of Supply Management

Employment & Wages

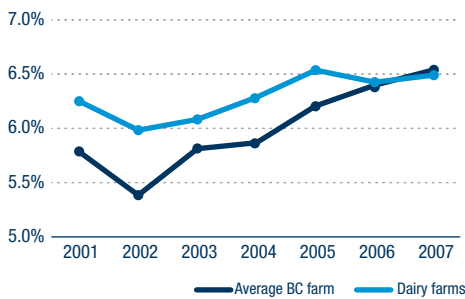
In 2007, the dairy industry employed about 4,362 people and was responsible for an estimated \$81.7 million in wages and salaries. Dairy farmers employ approximately 12% of BC's agricultural labour force.

Investment & Purchases

Investment in machinery and equipment (M&E) is important as it can help to improve farm efficiency. Traditionally, dairy farmers have invested slightly more of their revenues in M&E than the average BC farm (Figure 5.7).

According to Statistics Canada, in 2007 BC dairy farms spent about \$24.6 million on milk cows and other primary inputs, \$95.3 million on feed, supplement, straw, and bedding, \$14.2 million on veterinary and breeding fees, and \$28 million on machinery expenses¹⁰.

Figure 5.7 Machinery Expenses over Operational Revenue



Source: Statistics Canada

BC Dairy Industry Value Chain

The dairy industry value chain methodology follows the distinct stages of production in the material flow from production of raw milk on the farm to delivery to the final consumer. Figure 5.8 illustrates the dairy industry value chain.

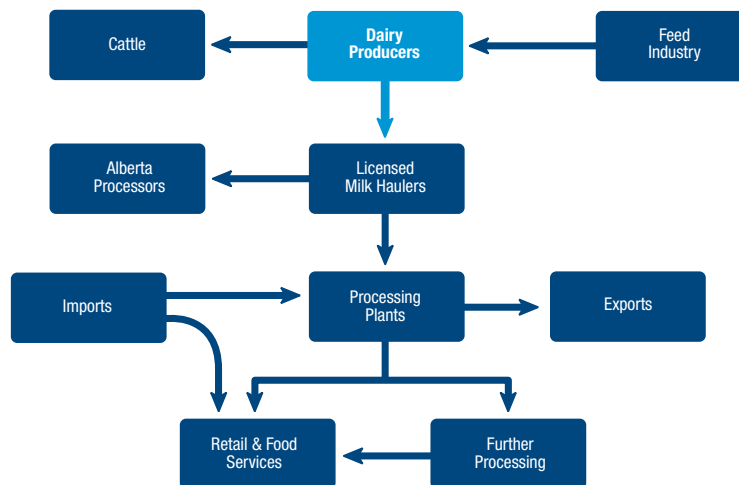
The value chain for the dairy industry is extensive and complicated going beyond milk producers and processing plants. Dairy farmers use the products and services from the machinery and equipment, animal medicine, and feed industries, while the transportation and packaging industries are also important for the processing and further processing plants. Dairy processing and further processing plants are located in the Fraser Valley, Okanagan and Vancouver Island. Because of transportation costs and distance to ship raw milk from northern BC to a BC processor, some raw milk from the Peace River area is processed in Alberta. Three major dairy processors account for over 90% of the raw milk processed in the province.

Economic Impact of the Value Chain for the Dairy Industry

In this section we present the economic impact of the dairy value chain from the producers to the processors (wholesale and retail activities are excluded from this analysis).

The impacts summarized in this section reflect the entire value chain for dairy but it is important to note that because BCDEPI products are inputs into the final manufacturing process, their activity results in indirect, or downstream, impacts of final demand or output. To provide an understanding of how these downstream impacts are accounted for in our estimates, we have provided a detailed illustration of economic impacts, by value chain segment in Appendix D. Detailed economic impacts for each BCDEPI commodity is provided as Appendix E.

Figure 5.8 BC Dairy Industry Value Chain



10. Machinery expenses include small tool expenses, net fuel expenses, machinery, truck, auto, repair, license, and insurance.

BC Dairy Value Chain

The economic impact of the BC dairy industry is summarized in the table below. Overall, the BC dairy industry is the largest component of the BCDEPI value chain contributing 48% of estimated BCDEPI aggregate output; 49% of estimated BCDEPI generated GDP; 47% of employment; 43% of salaries and 49% of tax revenue.

Table 5.1 Economic Impact of the BC Dairy Industry Value Chain

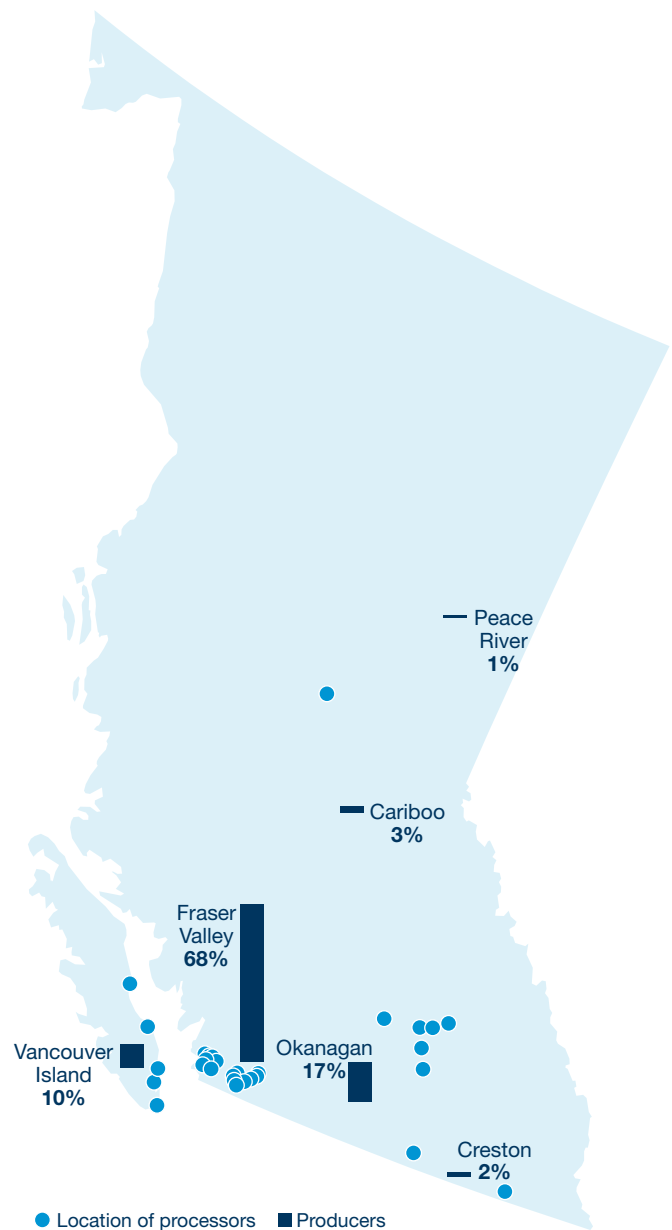
Impact	Direct (\$m)	Indirect (\$m)	Induced (\$m)	Total (\$m)
Output	1,153,900	1,137,402	126,929	2,418,231
GDP	288,468	414,810	69,234	766,512
Wages & Salaries	95,615	246,383	41,123	383,120
Taxes	39,233	39,233	23,078	101,543
Impact	Direct (FTE)	Indirect (FTE)	Induced (FTE)	Total (FTE)
Employment	2,618	9,505	1,096	13,220

In total, the BC dairy industry generates approximately \$2.4 billion in economic output, of which close to \$767 million can be considered new, or value-added to the economy. The GDP total includes \$288 million from dairy processing, \$121 million from dairy producers, and \$363 million from other related and induced economic activity.

Approximately 7,000 jobs are supported directly by dairy producers (4,362) and processors (2,618), with a further 6,240 in related industries.

Finally, approximately \$100 million in municipal, provincial, and federal taxes are generated directly and indirectly by the dairy industry.

Figure 5.9 Map of Dairy Producers and Processors



5.2 British Columbia Chicken Industry

Overview

- In 2007, there were 325 chicken farms in British Columbia producing about 158 million kilograms of meat and generating \$275 million in farm cash receipts
- Chicken farms accounted for about 11% of total farm cash receipts in British Columbia
- Chicken producers generated approximately \$78 million towards provincial GDP and employed about 2,826 people representing 7.8% of BC agriculture jobs
- Chicken producers contributed an estimated \$28.6 million in municipal, provincial, and federal taxes

Poultry Industry Value Chain

- Including chicken and turkey producers, processors and allied industries, the BC poultry industry value chain generates approximately \$2.0 billion in economic output contributing \$605 million in GDP to BC's economy
- About 6,900 jobs are supported directly by chicken producers, turkey producers, hatching egg producers, hatcheries, and poultry processors with a further 4,600 in related industries
- Approximately \$79 million in municipal, provincial, and federal taxes are generated directly and indirectly by the poultry industry

Supply Management in the Chicken Industry

Provincial

Chicken quota in Canada is shared by each province from a quota allocation that is set periodically every 8 weeks. Each province commits to produce a quantity corresponding to its periodic quota allocation without exceeding it. In British Columbia, the British Columbia Chicken Marketing Board (BCCMB) controls the supply of chicken to match the estimated demand in the province, given a calculated price paid to producers.

The BCCMB was created in 1961 with the mandate to monitor and regulate the production and marketing of chicken in British Columbia. Included are all activities from the time the chick hatches until the chicken is purchased at the retail level. The BCCMB also negotiates the producer selling price of chicken with processors.

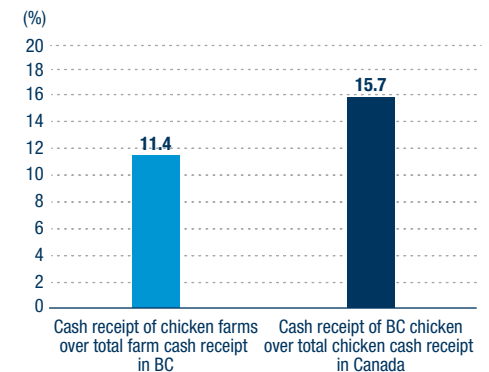
Federal

The Chicken Farmers of Canada (CFC) has administered the national system for chicken since 1979. CFC uses a "bottom-up" approach to determine the national supply of chicken, taking into account the needs of downstream industry. Each province submits requests to CFC for a specific volume of provincial production. CFC then determines whether the aggregate represents the Canadian market requirements for the quota period. The agency implements the quota order upon the National Farm Products Council's approval. The provincial boards then allocate the quota to registered producers.

Volume and Revenues

In 2007, British Columbia chicken farmers produced 158 million kilograms of chicken valued at \$274.9 million. Chicken production is one of BC's top three agriculture industries, representing 11% of total farm cash receipts. The BC chicken industry accounts for about 16% of all Canadian chicken farm cash receipts (Figure 5.10).

Figure 5.10 Relative Size of the Chicken Industry in BC and Canada, 2007



Source: Statistics Canada

Between 2002 and 2007, chicken production (in kilograms) in British Columbia has been stable (excluding 2004) averaging about 147 million kilograms of chicken per year (Figure 5.11). In 2004, an outbreak of avian influenza in the Fraser Valley reduced chicken production by 18% from the previous year. Since then, the chicken industry has recovered and in 2007 BC chicken production was 5% higher than the year prior to the avian influenza outbreak.

Because data on imports, exports, and interprovincial movements of final product is only available at an aggregated level for Canada, it is difficult to measure the actual demand for chicken in BC. Instead, to calculate the disappearance of BC produced chicken, total BC production was used and adjusted to exclude 11%

of production attributable to the market development (export) program with the exception of 2004 where no exports were assumed.¹² Figure 5.12 shows that BC disappearance of chicken has been fairly stable other than 2004.

Figure 5.13 illustrates that inflation in British Columbia has increased 3.2% per year since 1980.¹³ Over the same period, the price received by poultry producers for their production has increased 1.1% per year. This implies that producer's incomes from poultry production have not increased as fast as the province's cost of living. It also suggests that food price increases have mostly occurred further along the value chain, during processing, distribution and at retail.

Number and Location of Producers in British Columbia

In 2007, there were 325 chicken farms throughout BC. The Fraser Valley is home to 85% of chicken producers, while 10% are located in the BC Interior with the remaining 5% located on Vancouver Island. Based on a PwC survey to farmers, the average BC chicken farm can hold about 50.2 thousand birds at any point in time.

Employment & Wages

The chicken industry employs about 2,826 people and is responsible for approximately \$52.9 million in wages and salaries. Chicken producers employ 7.8% of the BC labour force in agriculture.

Figure 5.11 Volume and value of chicken production in BC

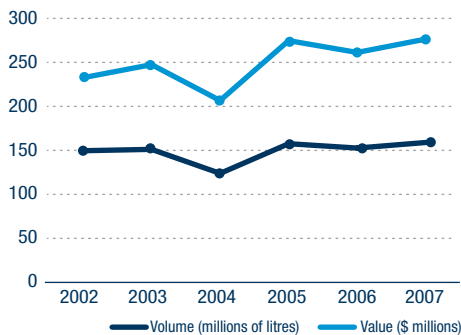
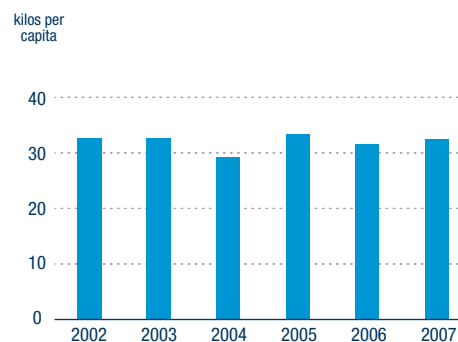
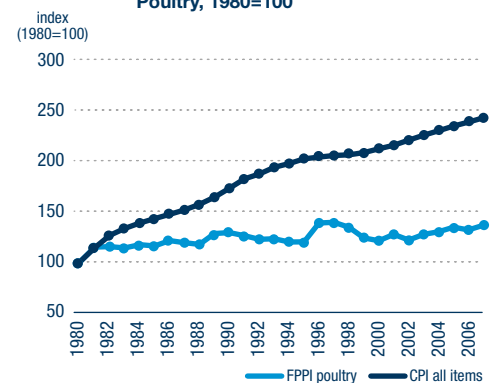


Figure 5.12 Per capita disappearance of BC produced chicken (thousands of kilos)¹¹



Source: Statistics Canada and Chicken Farmers of Canada

Figure 5.13 BC Consumer Price Index (CPI) and Farm Product Price Index (FPPI) for Poultry, 1980=100



Source: Statistics Canada

11. Per capita disappearance provides a proxy measure for total per capita consumption as not all import and export data is available to make the calculation.

12. The market development program is a tool used by producers to balance white and dark meat preferences of the Canadian consumer which is 60% white and 40% dark. Market development production ranges from 8-14% of domestic production and must be exported. For purposes of calculating provincial disappearance, an average production of 11.5% was used.

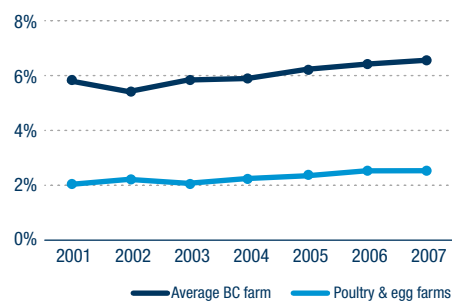
13. Measured through CPI, which is the rate of price change for goods and services.

Investment & Purchases

Investment in machinery and equipment (M&E) is important as it can help to improve farm efficiency. Before 2004, the average BC poultry farmer spent about 2% of operational revenue on machinery expenses (Figure 5.14).¹⁴ After the avian influenza outbreak, poultry farms appear to have increased their investment in M&E indicating these farms could be making investments to comply with new biosecurity standards.

In 2007, BC chicken producers spent about \$55 million on chicks and other primary inputs, \$92.3 million on feed, supplement, and bedding, \$2.1 million on veterinary and breeding fees, and \$6.8 million on machinery expenses.¹⁵

Figure 5.14 Machinery Expenses over Operational Revenue



Source: Statistics Canada

BC Chicken Industry Value Chain

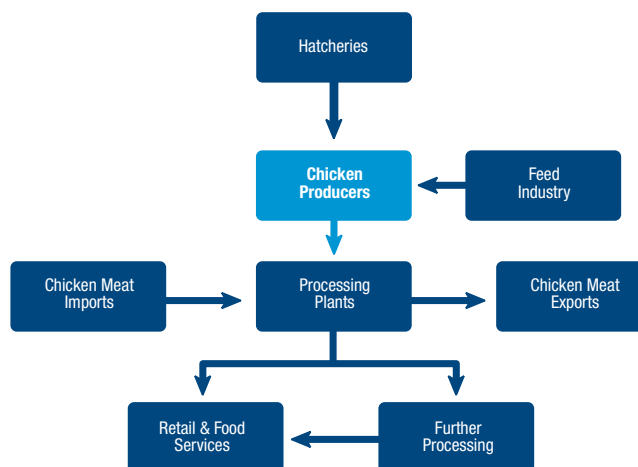
The BC chicken industry value chain methodology follows the distinct stages of production in the material flow from chicken producers to primary and further processors (wholesale and retail sales to final consumers have been excluded from this analysis).

The chicken industry is comprised of several industries cooperating to produce chicken and processed chicken products for consumers, such as hatcheries, broiler chicken producers, processors, further processors, wholesales and retailers.¹⁶ In 2007, there were 5 hatcheries, 15 primary processing plants, and 33 further processing plants in BC. Also, the feed and animal medicine industries, transportation

and packaging industries, and equipment suppliers are important industries that support the chicken industry. The diagram on Figure 5.15 presents the chicken industry value chain.

In British Columbia, chicken processors and further processors are located in Abbotsford (processing and further processing), Armstrong (processing), City of Vancouver (processing and further processing), Coquitlam (processing), Port Coquitlam (processing), and Surrey (further processing).

Figure 5.15 BC Chicken Industry Value Chain



14. The definition of poultry farms includes the chicken, turkey, hatching egg, and table egg industries.

15. Statistics Canada poultry and eggs data was disaggregated by using the share of farm cash receipts from chicken, turkey, hatching egg, and table egg industries.

16. Primary processing plants slaughter the birds and prepare the meat for the retail and food service markets, while further processing plants produce consumer-ready products such as chicken nuggets and pot pies.

Economic Impact of Value Chain for Poultry (Chicken, Turkey and Hatching Egg)

In this section we present the economic impact of the poultry, (chicken, turkey and hatching egg) value chain.

The impacts summarized in this section reflect the entire value chain for poultry but it is important to note that because BCDEPI products are inputs into the final manufacturing process, their activity results in indirect, or downstream, impacts of final demand or output. To provide an understanding of how these downstream impacts are accounted for in our estimates, we have provided a detailed illustration of economic impacts, by value chain segment, in Appendix D. Detailed economic impacts for each BCDEPI commodity is provided as Appendix E.

BC Poultry Value Chain

The economic impact of the BC poultry industry is summarized in Table 5.2 below. Overall, the BC poultry industry accounts for 39% of estimated BCDEPI aggregate output; 39% of estimated BCDEPI generated GDP; 41% of employment; 43% of salaries and wages; and 39% of tax revenue.

Table 5.2 Economic Impact of the BC Poultry Industry

Impact	Direct (\$m)	Indirect (\$m)	Induced (\$m)	Total (\$m)
Output	903,075	962,724	99,338	1,965,137
GDP	207,952	342,895	54,185	605,032
Wages & Salaries	144,128	210,017	33,187	387,332
Taxes	30,705	30,705	18,062	79,471

Impact	Direct (FTE)	Indirect (FTE)	Induced (FTE)	Total (FTE)
Employment	3,165	7,509	858	11,532

In total, the BC poultry industry generates approximately \$2.0 billion in economic output, including \$605 million in GDP. The GDP total includes \$207 million from poultry processors, \$11 million from hatching egg producers, \$13 million from hatcheries, \$78 million from chicken producers, \$12 million from turkey producers, and \$228 million from other related and induced economic activity.

Approximately 6,900 jobs are supported directly by chicken producers, turkey producers, hatching egg producers, hatcheries, and poultry processors, with a further 4,600 in related industries.

Finally, approximately \$79 million in taxes are generated directly and indirectly by the poultry industry.

Figure 5.16 Map of Poultry Producers and Processors



5.3 British Columbia Turkey Industry

Overview

- In 2007, there were 64 turkey farms in British Columbia producing about 21.3 million kilograms of meat and generating \$41.9 million in farm cash receipts
- Turkey farms accounted for about 1.7% of total farm cash receipts in British Columbia
- BC's turkey producers generated approximately \$83.1 million in economic output in direct, indirect, and induced impacts, of which close to \$30.6 million can be considered contribution towards GDP
- Wages and salaries in the turkey producing industry were approximately \$17.7 million for about 756 people employed with 431 workers or 1.2% of BC agriculture jobs in turkey production
- Approximately \$4.3 million in municipal, provincial, and federal taxes are generated directly and indirectly by turkey production

Supply Management in the Turkey Industry

Provincial

The British Columbia Turkey Marketing Board (BCTMB) was established in 1966. It has the authority to regulate the production of all turkey grown for either meat or eggs in British Columbia. The BCTMB allocates the production of turkey to individual producers and ensures production happens within their allocation. It also licenses producers and processors, promotes turkey products, and sets the producer price in negotiations with processors.

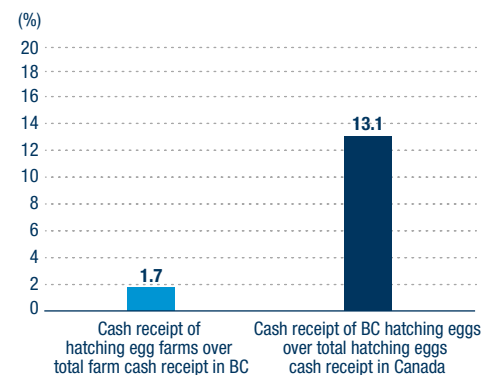
Federal

Created in 1974, the Canadian Turkey Marketing Agency (CTMA) is the national marketing agency that administers the national system for turkey. The CTMA determines the volume of turkey to be produced in Canada each year for domestic consumption based on consultations with the turkey industry. The volume determined is then allocated via a quota order between the eight provincial boards using criteria set out in the federal-provincial agreements. CTMA then implements the quota order upon the National Farm Products Council's approval. The provincial boards then allocate the quota to registered producers.

Volume and Revenues

In 2007, British Columbia produced 21.3 million kilograms of turkey valued at \$41.9 million, which represented 1.7% of total farm cash receipts in the province. BC turkey production ranks third among Canadian provinces accounting for 13.1% of all Canadian turkey farm cash receipts (Figure 5.17).

Figure 5.17 Relative Size of the Turkey Industry in BC and Canada, 2007



Source: Statistics Canada

Between 2002 and 2007, turkey production (in kilograms) in British Columbia has changed significantly (Figure 5.18). In 2004, the province experienced an avian influenza outbreak in the Fraser Valley, which reduced turkey production by 19% from the previous year. However, the industry has been able to recover from the consequences of the outbreak. In 2005, BC turkey farmers were already producing 24% more turkey meat than the year prior to the outbreak. The per capita disappearance of turkey meat in British Columbia has also increased since 2004 (Figure 5.19).¹⁷

The increase in per capita disappearance of turkey in British Columbia can be attributed to consumer preference for leaner types of protein products¹⁸. Consumer demand for turkey meat products is also influenced by the comparative prices of alternative meat products.

Figure 5.20 illustrates that inflation in British Columbia has increased 3.2% per year since 1980.¹⁹ Over the same period, the price poultry producers received for production has increased 1.1% per year. This implies that BC farmer's incomes related to poultry production have not increased as fast as the provincial cost of living. This also suggests that food price increases have mostly occurred further along the value chain, during processing, distribution and at retail.

Number and Location of Producers in British Columbia

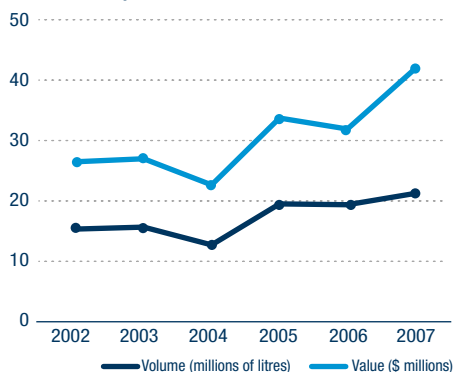
British Columbia's turkey industry includes 64 registered turkey producers. The Fraser Valley is home to 90% of turkey producers, 2% are located in the BC Interior with 8% located on Vancouver Island. Based on a PwC survey with farmers, the average BC turkey farm can hold about 27.1 thousand birds at any point in time.

Between 2001 and 2007, turkeys processed in British Columbia increased 33% from 16.1 million kilograms to 21.3 million kilograms.

Employment & Wages

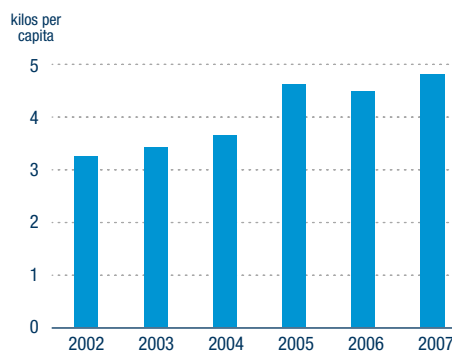
Turkey producers employ about 431 people and are responsible for about \$8.1 million in wages and salaries. Turkey farm employees make up 1.2% of BC's agricultural labour force.

Figure 5.18 Volume and value of turkey production in BC



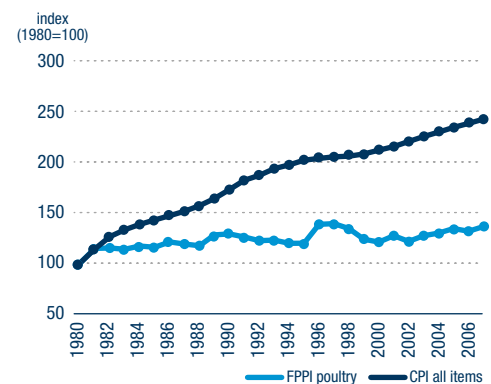
Source: Statistics Canada

Figure 5.19 Per Capita Disappearance of Turkey in BC (thousands of kilos)



Source: Statistics Canada and CTMA

Figure 5.20 BC Consumer Price Index (CPI) and Farm Product Price Index (FPPI) for Poultry, 1980=100



Source: Statistics Canada

17. Per capita disappearance provides a proxy measure for total per capita consumption as data for the interprovincial movement of final products is not available.

18. Turkey contains less saturated fat and cholesterol than red meat, chicken, and most fish and shellfish.

19. Measured through CPI, which is the rate of price change for goods and services.

Investment & Purchases

Investment in machinery and equipment (M&E) is important as it can help to improve farm efficiency. Before 2004, the average BC poultry farmers spent about 2% of operational revenue on machinery expenses (Figure 5.21).²⁰ After the avian influenza outbreak, poultry farms appear to have increased their investment in M&E indicating these farms could be making investments to comply with new biosecurity standards.

In 2007, BC turkey farms spent about \$8.4 million on turkey poults and other primary inputs, \$14.1 million on feed, supplement, bedding, \$0.3 million on veterinary and breeding fees, and \$1 million on machinery expenses.²¹

BC Turkey Industry Value Chain

The BC turkey industry value chain methodology follows the distinct stages of production in the material flow from turkey producers to primary and further processors (Wholesale and retail sales to final consumers have been excluded from this analysis).

BC's turkey industry is comprised of several industries cooperating to produce turkey and processed turkey products for consumers, such as breeders and breeder growers, hatching egg producers, hatcheries, turkey producers, processors, further processors, wholesales and retailers. In addition to the 64 registered turkey producers, BC is also home to 4 processing plants,

and 1 hatchery. Also, the feed and animal medicine industries, transportation and packaging industries, and equipment suppliers are important allied industries that support the turkey industry.

Hatcheries are important in the turkey supply chain as they link turkey hatching egg producers and turkey producers. Primary processing plants receive the birds from the producers and then prepare the meat for the retail and food service markets. Further processing plants produce consumer-ready products such as deli meats and pot pies.

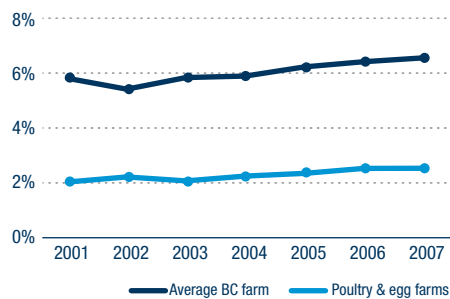
Figure 5.22 illustrates the turkey industry value chain.

Economic Impact of Value Chain for Poultry (Chicken, Turkey and Hatching Egg)

The economic impacts of turkey production and processing have been included as part of the poultry value chain. Results of the economic impact analysis of the poultry value chain are presented in Section 5.2.

Because BCDEPI products are inputs into the final manufacturing process, their activity results in indirect, or downstream, impacts of final demand or output. To provide an understanding of how these downstream impacts are accounted for in our estimates, we have provided a detailed illustration of economic impacts, by value chain segment, in Appendix D. Detailed economic impacts for each BCDEPI commodity is provided as Appendix E.

Figure 5.21 Machinery Expenses over Operational Revenue

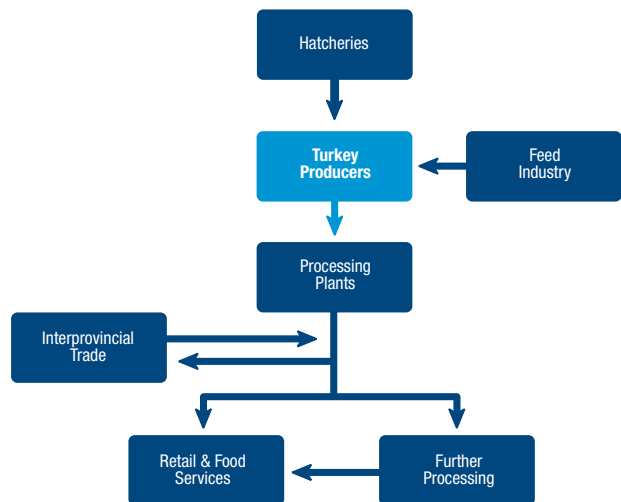


Source: Statistics Canada

20. The definition of poultry farms includes the chicken, turkey, hatching egg, and table egg industries.

21. Statistics Canada poultry and eggs data was disaggregated by using the share of farm cash receipts from chicken, turkey, hatching egg, and table egg industries.

Figure 5.22 BC Turkey Industry Value Chain



5.4 British Columbia Broiler Hatching Egg Industry

Overview

- In 2007, there were 58 hatching egg farms in British Columbia producing about 9.3 million dozen eggs and generating \$38.3 million in farm cash receipts
- Hatching egg farms accounted for about 1.6% of total farm cash receipts in British Columbia
- BC's hatching egg producers generated approximately \$75.9 million in economic output in direct, indirect, and induced impacts, of which close to \$28.0 million can be considered contribution towards GDP
- Wages and salaries in the hatching egg producing industry were approximately \$16.2 million for about 691 people employed with 394 workers or 1.1% of BC agriculture jobs directly employed in hatching egg production
- Approximately \$4.0 million in municipal, provincial, and federal taxes are generated directly and indirectly by hatching egg production

Supply Management in the Broiler Hatching Egg Industry

Provincial

The British Columbia Broiler Hatching Egg Commission (BCBHEC) was created in 1988. It oversees the production activities of BC broiler hatching egg producers, regulates the marketing of their product, and acts as a leader for the BC broiler hatching egg producers in dealings with other participants of the chicken meat industry.

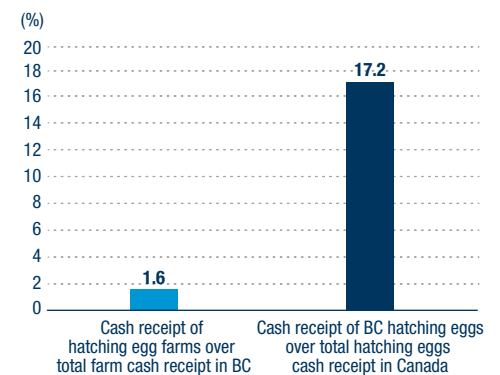
Federal

Created in 1986, the Canadian Hatching Egg Producers (CHEP) is the national marketing agency that administers the national system for broiler hatching eggs. CHEP estimates the national demand for broiler hatching eggs and prepares an order to allocate this amount among the provincial boards. Upon the National Farm Products Council's approval, CHEP implements the quota order among the provincial boards which then allocates quota to producers taking into account the needs of chicken producers.

Volume and Revenues

In 2007, British Columbia produced 9.3 million dozen hatching eggs valued at \$38.3 million, which represents 1.6% of the total farm cash receipts in the province. The BC broiler hatching egg industry is small relative to other supply management industries in the province, but is significantly large when compared to the Canadian broiler hatching egg industry. The BC hatching egg industry represents 17% of all Canadian hatching egg farm cash receipts (Figure 5.23).

Figure 5.23 Relative Size of the Hatching Egg Industry in BC and Canada, 2007

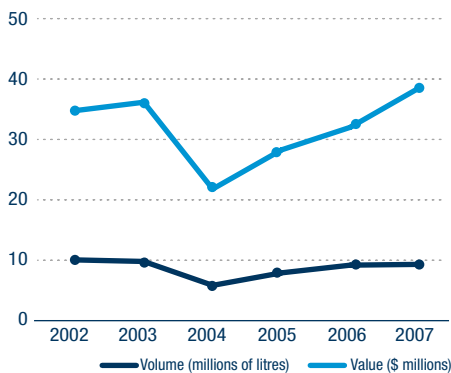


Source: Statistics Canada

Production of hatching eggs (number of eggs) in British Columbia declined 40% from 2003 to 2004 due to the outbreak of avian influenza in the Fraser Valley. Since 2004, the hatching egg industry has grown 17% per year, although production has not fully recovered to previous volumes. In 2007, production was 5% lower than the year prior to the outbreak (Figure 5.24).

Excluding 2004 and 2005 due to the avian influenza outbreak, BC hatching egg producers have consistently supplied between 80 and 85% of the provincial demand. Based on supply patterns pre-NAFTA, a bilateral agreement was negotiated through the WTO that allows 20% of BC hatching eggs to be imported from the United States. (Figure 5.25).

Figure 5.24 Volume and Value, Hatching Egg Production in BC



Source: Statistics Canada and BC Hatching Egg Commission Source: Statistics Canada and Canadian Hatching Egg Producers

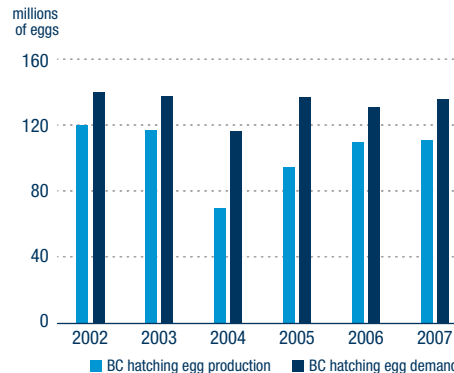
Number of Producers

There are 58 registered hatching egg producers in British Columbia. Based on a PwC survey to hatching egg producers, there are about 820 thousand laying birds in British Columbia with an average of 14,121 laying birds per farm.

Employment & Wages

The industry employs about 394 people and is responsible for about \$7.4 million in wages and salaries. Hatching egg farmers employ 1.1% of BC's agricultural labour force.

Figure 5.25 Demand and Production hatching eggs, BC (Millions of eggs)

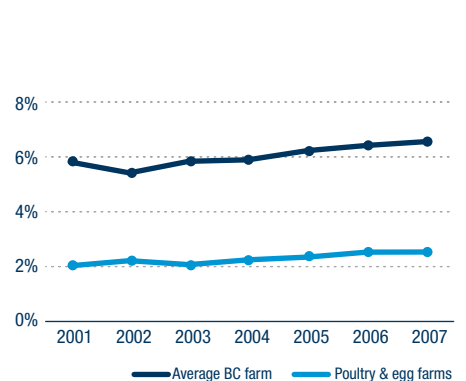


Investment & Purchases

Investment in machinery and equipment (M&E) is important as it can help to improve farm efficiency. Before 2004, the average BC poultry farmer spent about 2% of operational revenue on machinery expenses (Figure 5.26).²² After the avian influenza outbreak, poultry farms appear to have increased their investment in M&E indicating these farms could be making investments to comply with new biosecurity standards.

In 2007, the BC broiler hatching egg producers spent about \$7.7 million on laying birds and other primary inputs, \$12.8 million on feed, supplement, and bedding, \$0.3 million on veterinary and breeding fees, and \$0.9 million on machinery expenses.²³

Figure 5.26 Machinery Expenses over Operational Revenue



Source: Statistics Canada

22. The definition of poultry farms includes the chicken, turkey, hatching egg, and table egg industries.
 23. Statistics Canada poultry and eggs data was disaggregated by using the share of farm cash receipts from chicken, turkey, hatching egg, and table egg industries.

BC Hatching Egg Industry Value Chain

The value chain methodology for hatching eggs follows the distinct stages of production in the material flow from hatching egg producers to broiler chicken producers.

The hatching egg industry output is the main input for the chicken industry, which makes the dependency of these two industries on each other unique. The hatching egg industry involves breeders and breeder growers, hatching egg producers, hatcheries, and broiler chicken growers. There are 5 hatchery facilities in BC, 4 are located in the Fraser Valley and 1 in the Okanagan. The feed and animal medicine industries, transportation and packaging industries, and equipment suppliers are important allied industries for the hatching egg industry operations.

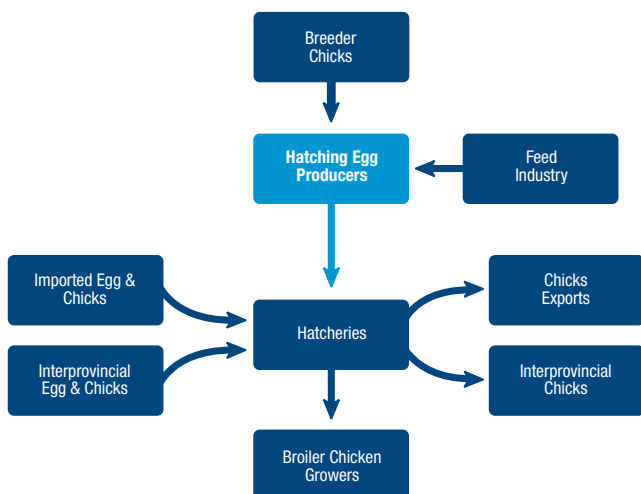
Figure 5.27 illustrates BC's hatching egg industry value chain.

Economic Impact of Value Chain for Poultry (Chicken, Turkey and Hatching Eggs)

The economic impacts of hatching egg production and processing have been included as part of the poultry value chain. Results of the economic impact analysis of the poultry value chain are presented in Section 5.2

Because BCDEPI products are inputs into the final manufacturing process, their activity results in indirect, or downstream, impacts of final demand or output. To provide an understanding of how these downstream impacts are accounted for in our estimates, we have provided a detailed illustration of economic impacts, by value chain segment, in Appendix D. Detailed economic impacts for each BCDEPI commodity is provided as Appendix E.

Figure 5.27 BC Hatching Egg Industry Value Chain



5.5 British Columbia Table Egg Industry

Overview

- In 2007, there were 129 table egg farms in British Columbia producing about 61.8 million dozen eggs and generating \$95.2 million in farm cash receipts
- Table egg producers accounted for approximately 3.9% of total farm cash receipts in British Columbia
- Table egg producers generated approximately \$27.2 million towards provincial GDP employing an estimated 978 workers representing 2.7% of BC agriculture jobs
- Approximately \$9.9 million in municipal, provincial, and federal taxes are generated directly and indirectly by table egg producers

Table Egg Industry Value Chain

- BC's table egg industry value chain generated approximately \$617.4 million in economic output contributing an estimated \$190.1 million in GDP to BC's economy
- About 2,100 jobs are supported directly by table egg producers and processors, with a further 1,500 in related industries
- Approximately \$25 million in municipal, provincial, and federal taxes are generated directly and indirectly by the table egg industry

Supply Management in the Table Egg Industry

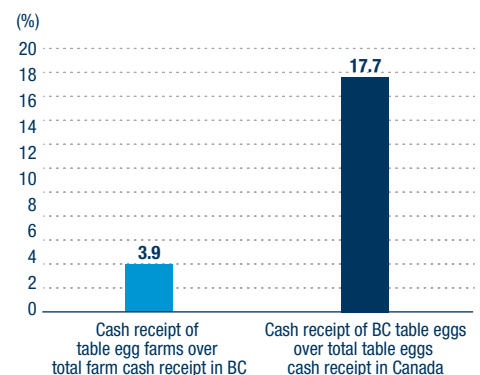
Provincial

The British Columbia Egg Marketing Board (BCEMB) was created in 1967 and is the provincial body authorized to promote, control, and regulate the production and movement of all eggs in the province. It is also responsible for setting prices for producers within its jurisdiction, using the Egg Farmers of Canada's cost-of-production formula. The cost of production formula is calculated based on what it would cost an efficient farmer to produce eggs. Table eggs are sold to grading stations and producers receive the price set by the BCEMB. Graders then sell these eggs to wholesalers, retailers, hotels, restaurants and breaking plants (further processors).

Federal

Egg Farmers of Canada (EFC) is the national marketing agency created in 1972. The EFC manages Canada's supply of eggs for consumption. Each year, it estimates what the table and processing markets will need and establishes a national quota that respects Canada's international trade agreements. The agency implements this national quota order upon the National Farm Products Council's approval. It allocates this quota between the provincial and territorial boards using criteria set out in federal-provincial-territorial agreements. The provincial and territorial boards then allocate quota to registered producers.

Figure 5.28 Relative size of the table egg industry in BC and Canada, 2007



Source: Statistics Canada

Volume and Revenues

In 2007, British Columbia produced 61.8 million dozens of table eggs valued at \$95.2 million, which represents 3.9% of total farm cash receipts in BC and 17.7% of all Canadian table egg farm cash receipts (Figure 5.28).

Between 2002 and 2007, the production of table eggs in British Columbia has changed dramatically (Figure 5.29). In 2004, an outbreak of avian influenza occurred in the Fraser Valley. Following measures to contain and eliminate the outbreak, egg production dropped 39% from the previous year. Since 2004, the BC table egg industry has been recovering from the outbreak and in 2007 egg production was 1.8% higher than 2003 levels.

Consumer demand for table eggs experienced a significant decline as a result of avian influenza. Since 2005, demand has increased although not to the same volume as before the outbreak (Figure 5.30). Overall, the national consumer trend for egg consumption has seen the sale of table eggs decline over time. However, national per capita egg consumption of eggs has stabilized around 15.2 dozen as sales of processed eggs have increased since 1995.²⁴

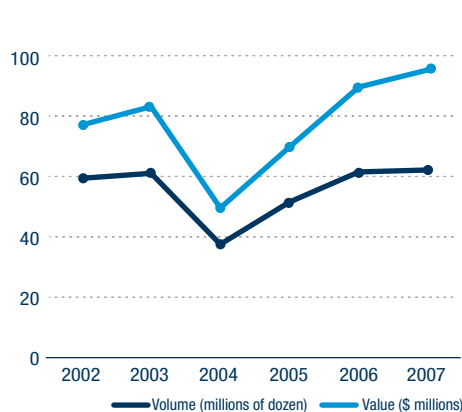
Figure 5.31 illustrates that inflation²⁵ in British Columbia has increased 3.2% per year since 1980. Over the same period, the price egg producers received for production increased 1.4% per year. This implies that BC farmer's incomes related to

egg production has not increased as fast as the province's cost of living. This also suggests that food price increases have mostly occurred further along the value chain, during processing, distribution and at retail.

Number of Producers

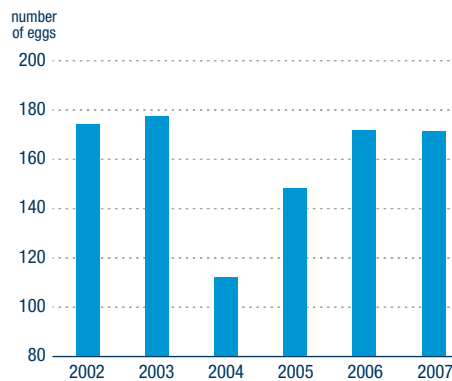
There are 129 registered table egg producers raising about 2.4 million laying birds in British Columbia. The Fraser Valley is home to 76% of table egg producers and 79% of laying birds. The BC Interior has 12% of table egg producers and 10% of the laying birds, while the remaining 12% of table egg producers and 11% of laying birds are located on Vancouver Island.

Figure 5.29 Volume and value of egg production in BC



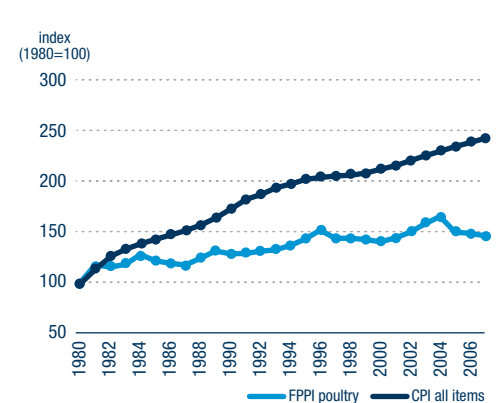
Source: Statistics Canada

Figure 5.30 Per Capita Demand for Table Eggs in BC (number of eggs)



Source: Statistics Canada and Egg Farmers of Canada

Figure 5.31 BC Consumer Price Index (CPI) and Farm Product Price Index (FPI) for Eggs, 1980=100



Source: Statistics Canada

24. Food Statistics, Statistics Canada Catalogue no. 21-020-X, 2007.

25. Measured through CPI, which is the rate of price change for goods and services.

5 Industry Profiles of Supply Management

In British Columbia, 13% of table egg farms have more than 30,000 laying birds (large size farm), 43% have between 15,000 and 29,999 laying birds (medium size farm), and 44% have less than 15,000 laying birds (small size farm). The average farm size in British Columbia has 18,600 laying birds.

Employment & Wages

The industry employs about 978 people and is responsible for about \$18.3 million in wages and salaries. Egg farmers employ 2.7% of BC's agricultural labour force.

Investment & Purchases

Investment in machinery and equipment (M&E) is important as it can help to improve farm efficiency. Before 2004, the average BC poultry farmer spent about

2% of operational revenue on machinery expenses (Figure 5.32).²⁶ After the avian influenza outbreak, poultry farms appear to have increased their investment in M&E indicating these farms could be making investments to comply with new biosecurity standards.

In 2007, table egg producers in BC spent about \$19.1 million on laying birds and other primary inputs, \$31.9 million on feed, supplement, and bedding, \$0.7 million on veterinary and breeding fees, and \$2.3 million on machinery expenses.²⁷

BC Table Egg Industry Value Chain

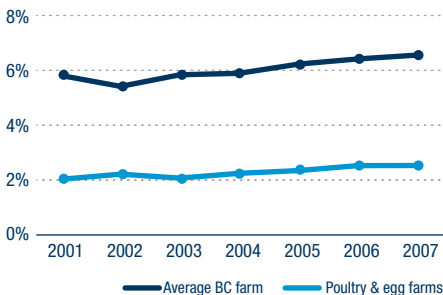
The value chain methodology for the table egg industry follows the distinct stages of production in the material flow from egg producers to processors (wholesale and retail are excluded from this analysis).

The extended table egg industry is comprised of different industries cooperating to produce table eggs and processed egg products to consumers, such as breeders and breeder growers, pullet growers, table egg producers, graders, breaker plants, wholesalers and retailers.

In the table egg industry value chain, grading plants are responsible for picking up the eggs from the farm, washing, grading the eggs, and packing them for the retail or food service industries. Egg graders are located on Vancouver Island and the Fraser Valley. Breaking plants receive approximately 18% of all egg production in British Columbia which then goes towards the production of liquid, frozen, or dried egg products.

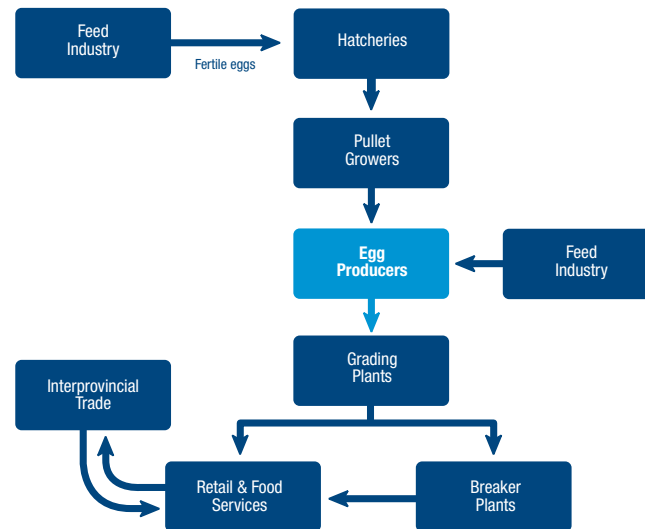
Figure 5.33 illustrates the table egg industry value chain.

Figure 5.32 Machinery Expenses over Operational Revenues



Source: Statistics Canada

Figure 5.33 BC Table Egg Industry Value Chain



26. The definition of poultry farms includes the chicken, turkey, hatching egg, and table egg industries.

27. Statistics Canada poultry and eggs data was disaggregated by using the share of farm cash receipts from chicken, turkey, hatching egg, and table egg industries.

Economic Impact of BC's Table Egg Value Chain

In this section we present the economic impact of the table egg value chain.

The impacts summarized in this section reflect the entire value chain for table eggs but it is important to note that because BCDEPI products are inputs into the final manufacturing process, their activity results in indirect, or downstream, impacts of final demand or output. To provide an understanding of how these downstream impacts are accounted for in our estimates, we have provided a detailed illustration of economic impacts, by value chain segment, in Appendix D. Detailed economic impacts for each BCDEPI commodity is provided as Appendix E.

BC Table Egg Value Chain

The economic impact of the BC table egg industry is summarized in Table 5.3. The BC table egg industry accounts for a relatively small portion of the overall aggregate impacts at 12% of estimated BCDEPI aggregate output; 12% of estimated BCDEPI generated GDP; 13% of employment; 14% of salaries and wages; and 12% of tax revenue.

Table 5.3 Economic Impact of the BC Table Egg Industry

Impact	Direct (\$m)	Indirect (\$m)	Induced (\$m)	Total (\$m)
Output	283,736	302,477	31,211	617,424
GDP	79,446	93,624	17,024	190,094
Wages & Salaries	45,283	65,985	11,998	123,267
Taxes	9,647	9,647	5,675	24,969
Impact	Direct (FTE)	Indirect (FTE)	Induced (FTE)	Total (FTE)
Employment	1,124	2,230	270	3,624

In total, the BC table egg industry generates approximately \$617 million in economic output, including \$190 million in GDP. The GDP total includes \$79 million from egg graders and breakers, \$27 million from table egg producers, and \$84 million from other related and induced economic activity.

Approximately 2,100 jobs are supported directly by table egg producers and processors, with a further 1,500 in related industries.

Finally, approximately \$25 million in taxes are generated directly and indirectly by the table egg industry.

6 Summary Tables & Charts



6.1 Summary of Industry Profiles

There are 1,191 producers in British Columbia under the supply management system (Table 6.1). The dairy industry corresponds to over half of all BCDEPI producers, followed by the chicken, table egg, turkey and hatching egg industries, respectively. Chicken production is the most labour intensive of the BCDEPI industries employing, on average, 9 employees per producer, while turkey and hatching egg production are the least labour intensive employing, on average, 7 workers per producer.

Table 6.1 Number of producers and workers (2007)

	Number of Producers	Employment	Average Employee	Production Volume (million)
Dairy	572	4,362	8	632.3 litres
Chicken	325	2,826	9	158.0 kilos
Table Egg	129	978	8	61.8 dozen eggs
Turkey	64	431	7	19.4 kilos
Hatching Egg	58	394	7	9.3 dozen eggs
Supply Management 5	1,148	8,991	8	

Table 6.2 illustrates the importance of the supply managed industries relative to the British Columbia agriculture sector. The combined BCDEPI industries account for over one-third of all BC farm cash receipts and one-quarter of all BC agriculture workers.

Table 6.2 Share of supply management farms of BC agriculture sector (2007)

	Farm Receipts (\$ million)	Share on Total BC Cash Receipts	Employment	Share on BC Agriculture Jobs
Dairy	\$424.2	17.6%	4,362	12.0%
Chicken	\$274.9	11.4%	2,826	7.8%
Turkey	\$41.9	1.7%	431	1.2%
Hatching Egg	\$38.3	1.6%	394	1.1%
Table Egg	\$95.2	3.9%	978	2.7%
Supply Management 5	\$874.5	36.2%	8,991	24.8%

Table 6.3 illustrates the farm cash receipts and expenditures associated with each supply-managed commodity. It shows that BC supply management industries allocate, on average, 28% of their revenues to feed, 22% to general expenses, 19% to wages and salaries, 13% to input purchases, and 4% to purchases of machinery and equipment.

Table 6.3 Farm cash receipts and expenditures (\$ million, 2007)

	Farm Receipt	Cattle, Poultry or Egg Purchase	General Expenses	Machinery	Wages & Salaries	Feed	Veterinary & Breeding Fees
Dairy	\$424.2	\$24.6	\$127.9	\$28.0	\$81.7	\$95.3	\$14.2
Chicken	\$274.9	\$55.1	\$40.4	\$6.8	\$52.9	\$92.3	\$2.1
Table Egg	\$95.2	\$19.1	\$14.0	\$2.3	\$18.3	\$31.9	\$0.7
Turkey	\$41.9	\$8.4	\$6.2	\$1.0	\$8.1	\$14.1	\$0.3
Broiler							
Hatching Egg	\$38.3	\$7.7	\$5.6	\$0.9	\$7.4	\$12.9	\$0.3
Supply Management 5	\$874.5	\$114.9	\$194.1	\$39.0	\$168.4	\$246.5	\$17.6

6.2 Estimated Economic Impacts of the Total Value Chain

BCDEPI Value Chain Aggregate Impact

The BCDEPI value chain impacts the BC economy through direct expenditures on goods and services, employing workers and generating tax revenues for local, provincial and federal governments. Aggregate impacts for the BCDEPI value chain are detailed in Table 6.4.

Table 6.4 BCDEPI Economic Impacts Summary Table

Impact	Direct (\$m)	Indirect (\$m)	Induced (\$m)	Total (\$m)
Output	2,340,712	2,402,602	257,478	5,000,792
GDP	569,866	851,329	140,443	1,561,638
Wages & Salaries	285,026	522,385	86,308	893,720
Taxes	79,584	79,584	46,814	205,983
Impact	Direct (FTE)	Indirect (FTE)	Induced (FTE)	Total (FTE)
Employment	6,907	19,244	4,681	28,375

The following sections provide further detail on the economic impact estimates provided in Table 6.5.

Output

Total output directly generated by the BCDEPI value chain is estimated to equal \$2.3 billion. Direct output supports a further estimated \$2.4 billion in indirect output in the BC economy and stimulates an additional \$257 million in induced economic impacts. Total output generated or supported by BCDEPI in the BC economy is therefore estimated at \$5.0 billion.

GDP

Economic output supported by the BCDEPI value chain is estimated to be \$1.6 billion in nominal GDP. BC Nominal GDP in 2007 was equal to approximately \$192 billion therefore, the estimated magnitude of the supply managed sector's GDP impact amounts to about 0.8% of the BC economy. Recognizing that contributions to GDP from the BCDEPI value chain are not as large as other sectors of BC's economy, in contrast, BCDEPI experiences less volatility in response to changing market conditions. In comparison, the pulp and paper manufacturing industry contributes approximately 1.0% towards provincial GDP.

Employment and Wages & Salaries

Economic activity generated by the BCDEPI value chain is estimated to support 28,375 jobs with \$893.7 million in associated wages and salaries. With approximately 2.3 million people employed in BC at the end of 2007, the estimated employment impacts represent 1.2% of total BC employment.

Table 6.5 compares the employment contributions of the BCDEPI value chain against other BC industry sectors. The comparison indicates that in 2007, the BCDEPI value chain generated more jobs than both the forestry and logging sector, and the mining and oil & gas extraction sector.

Additional analysis indicates that between 2002 and 2007, the forestry and logging sector experienced a negative 0.8% average annual change in employment. Of greater significance though is the more recent change in employment that occurred from 2007 to 2008 when the annual change in employment declined by -28.4%.

In contrast, components of the BCDEPI value chain experience relatively stable employment even during times of economic instability.

Table 6.5 Employment Comparison of major BC industries (2007)

	Employment '000s	Share of Provincial Total %
Total BCDEPI Value Chain	28.4	1.2%
Tourism*	120.4	5.5%
Forestry and Logging (plus support services)	24.3	1.1%
Mining and Oil & Gas Extraction (plus support services)	20.0	0.9%
British Columbia	2,266	100%

*Tourism data refers to 2006

Source: Statistics Canada, BC Stats, and PwC

Tax Revenue

Aggregate taxes generated by the BCDEPI value chain are estimated to be close to \$206 million. Approximately \$105 million is estimated to accrue to the Federal government; a further \$82 million is estimated to flow to the Provincial government with the remaining \$19 million going to municipal governments.

6.3 Economic Benefits

Contribution towards Community Economic Stability

The supply management system helps to support the sustainability of family-owned farms by providing ongoing cash flows based on weekly production. Because negotiated selling prices are received for their products, producers know on a continuing basis their financial position. From this position, producers are better able to plan and make decisions regarding farm operations. With financial certainty, the producer can determine whether to replace capital equipment, hire labour to assist on the farm or buy better feed inputs. In contrast, producers operating in open market situations such as the beef or hog industry, receive payment for product infrequently and without assurance of a profitable return. These producers may also be less likely to spend on farm upgrades or increase their animals knowing that cash reserves may be needed to ensure survival during market price declines.

Producers with stable cash flows can have a positive impact on the local community. Family farms tend to support local businesses which could help to maintain the economic integrity of rural communities. Local businesses selling to supply managed farms know their bills will be paid on an ongoing basis. These businesses may diversify and offer additional goods and services to other customers who may not otherwise be able to create sufficient demand by themselves. Local communities benefit from the diversity of services that can be supported knowing that the supply managed industry is being operated on a long term basis and is not subject to market volatility. During an interview conducted for this study, a producer mentioned doing business with 62 local goods and services suppliers within a three community range of his farm during one year.

Farm efficiency

The supply management system encourages farm efficiency. Intense scrutiny on cost and pricing occurs when quota allocation and production cost pricing formulas are negotiated. The methodology behind production cost pricing formulas motivates producers to increase farm efficiencies. As a result producers continually look for ways to improve on-farm efficiencies so as to maximize the negotiated price received for their products.

External factors can also influence the drive to increase farm efficiency as producers are unable to charge more for their product even if the cost of inputs increases substantially. A recent example of cost escalation has been the increased cost of poultry feed. Corn prices increased significantly in response to the demand for corn-based ethanol production. While the recent recession and drop in oil prices has provided some relief, producers are yet to see significant declines in feed prices. Even so, producers are required to work within the negotiated selling price to cover input costs and generate a profit.

Producers are entrepreneurs

The supply management system encourages producers to be entrepreneurs. The attractiveness of supply management for producers is the ability to generate stable cash flows. Within this environment, producers are more likely to undertake investments to upgrade and expand their farm. It is not unusual for producers to purchase additional quota or quota for other types of commodities. Producers also look for other opportunities to invest that could be in related businesses such as feed supply or outside of the commodity sector in areas such as real estate.

Supply managed farms are privately owned operations. The owners (producers) are actively involved in the operations and are motivated by the ability to make decisions involving investments and purchases. In contrast, in jurisdictions with multinational agriculture corporations, the trend is towards producers becoming contract growers resulting in the loss of ability to make major decisions regarding their farm. Producers invest in supply managed industries knowing there is a future for the industry and potential growth opportunities in the market.

7 Social Contribution of BC's Supply Management Industries



7.1 Introduction

Benefits generated from supply managed farms also include contributions to social development. Social contributions are not easily quantified, but may have far reaching impacts on individuals and communities. While an activity such as food safety is regulated through federal and provincial legislation, the supply management boards and associations are actively involved in providing information, training, auditing, or monitoring program delivery. The tightly integrated structure of the supply management system enables the boards to reach out to the extended value chain of the industry. The resulting organizational structure gives the board a platform to provide leadership on critical issues such as the Biosecurity Initiative and the Premise ID Program.

Other social contributions are provided as a result of the stability of the market and include public media campaigns, research and development activities and community support.

For the poultry industry, a portion of the levies paid to the marketing boards by the producers flow to the producer associations. These associations then take on activities that are outside the supply management mandate and farm operations of which marketing the product on behalf of the producer's is a key role.

For the dairy industry, all producers contribute to the BCMPA and BCDF through a check-off through the Dairy Industry Development Council. These funds are directed towards dairy industry activities that are not regulatory in nature.

7.2 On Farm Food Safety

Consumers and food processors have an expectation that food will be safe for consumption. Food safety is provided through a variety of regulatory guidelines and programs delivered to the producer by the marketing boards or associations. The boards typically work with producers to undertake the needed measures for compliance with farm food safety programs that monitor, control and prevent food safety risks. Each supply managed commodity has a farm food safety assurance program that incorporates the Hazard Analysis and Critical Control Point (HACCP) tools and Good Production Practices (GPP's). Farm food safety programs maintain records of the biological, chemical, and physical events that occur in the barn. Reporting farm practices enables greater traceability should a food safety risk occur.

The national supply management organizations provide program design and training while most provincial marketing boards or associations provide program administration and conduct farm audits to determine compliance. Through their regulatory powers, marketing boards can enforce mandatory measures by reductions in allocation, fines and other methods. Overall accountability is at the federal level provided through the Canadian Food Inspection Agency (CFIA).

On farm food safety programs are mandatory for most commodities. The On-Farm Food Safety Assurance Program for the five commodities include:

Chicken – Safe, Safer, Safest

Turkey – On-farm Food Safety Program (OFFSP)

Table Egg – Start Clean-Stay Clean™

Hatching Egg – CHEQ™ (Canadian Hatching Egg Quality)

Dairy – Canadian Milk Quality Program

An industry initiative that is critically important for poultry boards (chicken, turkey, hatching eggs, and table eggs) is the BC Poultry Bio-security program and for all marketing boards, the Premises ID program. The poultry boards each contribute time and resources to ensure farms are compliant with the biosecurity program. All supply managed farms in BC are involved in the Premise ID program and the associated emergency response committee.

B.C. Poultry Bio-security Program

In response to the 2004 avian influenza outbreak, the B.C. Poultry Bio-security program was developed. BC is so far the only province to implement this program. Led by the BC Poultry Association, the Bio-security program is supported by the federal and provincial governments, provincial poultry boards, and industry.²⁸ The implementation of mandatory bio-security standards will reduce the risk of infectious disease transferring across poultry flocks. A large percentage of farms have undergone audits to determine compliance and have subsequently received certification. Benefits to the public of enforcing this program will be a reduced risk to public health that may result from certain poultry diseases. Producers will benefit from reducing economic risks to themselves and the industry.

28. The BC Poultry Association represents the interests of the chicken, turkey, and egg producers in implementing a bio-security program for farms.

29. BC Chicken Marketing Board, <http://www.bcchicken.ca/offsap/index/listing/5>

7 Social Contribution of BC's Supply Management Industries

In 2007, the poultry boards made the BC Bio-Security program mandatory for their producers.²⁹ Producers will participate in periodic audits of their farms to determine compliance. Responsibility for enforcement of bio-security standards will be with the marketing boards.

Premise ID and Emergency Response

The premise identification program is an example of industry's response to the avian influenza outbreak in 2004 and spring flooding in the Fraser Valley. Under the first phase of this program, registered producer premises are identified, mapped and provided with a unique premise identification number. In the event of disease outbreak or possible flooding conditions, the industry is able to use this information together with emergency response procedures and protocols to provide early notification.³⁰

7.3 Animal Care

The response to changing consumer attitudes regarding animal care on farms is an important issue for producers and the national and provincial supply management boards. Generally, producers are aware of the importance of ensuring the health and safety of their farm animals as it impacts farm profitability. However, with increased scrutiny from consumers, more pressure is being placed on producers to be accountable for the welfare of farm animals.

Through a process of consultation, the national commodity boards have approved auditable animal care programs that producers are required to implement. Animal care programs are based on national standards and integrate with farm food safety programs for each commodity. At the provincial level, marketing boards have the authority to levy fines or withdraw quota from producers for non-compliance.

Standards used to develop the poultry producers animal care program are based on the, "Canadian Recommended Code of Practice for the Care and Handling of Chickens, Turkeys and Breeders from Hatchery to Processing Plant." The dairy industry recently revised its 1990 code of practice for handling animals to reflect improvements in farm management. Consultations for producer programs included partnering with the National Farm Animal Care Council (NFACC), scientists, veterinarians, and industry to produce a science-based program with measurable outcomes.

7.4 Environmental Performance

Supply management boards are not directly involved with the oversight of environmental issues on producer farms. However, environmental planning is performed at the farm level in response to provincial and federal requirements. The Environmental Farm Plan is a national program supported by industry that complements their current environmental practices.³¹ The BC Agriculture Council (BCAC) delivers the program on behalf of the program partners, Agriculture and Agri-food Canada (AAFC), and the BC Ministry of Agriculture and Lands (BCMAL). The objectives of the program are to ensure a sustainable agricultural industry in BC through measures that protect the land, enhance the effectiveness and competitiveness of farms, provide a process to help farmers identify environmental opportunities and risks on their land, and reduce conflicts between agriculture and environmental interests. Although participation in the program is voluntary, it provides producers with an opportunity to demonstrate their environmental stewardship practices.

Generally, producers are already conscious of minimizing waste and by-products of production. Because of the balance between supply and demand there is an inherent efficiency built into the production process that results in minimized waste and by-products. Nothing is produced superfluously therefore there are no gluts or shortages that could stress farm resources in a non-sustainable manner. In addition, the push to increase efficiency ensures producers investigate improved on-farm management practices such as nutrient management plans, or other opportunities such as exploring the feasibility of biogas production or reduction of methane emissions through anaerobic digestion.

The Sustainable Poultry Farming Group is an environmental initiative that was formed in response to concerns about contamination of the Abbotsford aquifer from the run-off of poultry manure. In 1991, a joint-committee was formed to investigate possible solutions for alternative uses of the manure. This initiative is funded by the BC Chicken Grower's Association, BC Turkey Growers Association, BC Broiler Hatching Egg Commission, BC Egg Producers Association, and the Province. The Sustainable Poultry Farming Group has since identified alternate ways of removing manure from the area including solutions that generate revenue.

30. Flooding in the lower Fraser Valley during the spring freshet is a concern to ensure the safety of humans and animals.

31. The Canada-British Columbia Environmental Farm Plan Program, www.bcac.bc.ca/EFP_pages/about_us/index.html

Reporting on sustainability measures is a growing global trend with food processors and distributors. As standards specific to food processing become available, it is likely that more processors will begin sustainability reporting.³² As a result of this trend, commodity producers may soon be asked to provide information on different sustainability measures and environmental practices. Although the supply management boards are not directly involved with producer environmental or sustainability issues, as more food processors and distributors undertake sustainability reporting, the boards could play a role in supporting producers to understand reporting measures such as farm carbon footprint.

7.5 Research & Development

British Columbia has been on the forefront of research and development in the agricultural sector. In 1911, Joseph Coyle of Smithers, designed and developed the first egg carton. His innovative design has since become the standard for ensuring the safe conveyance of eggs from the farm to the table.

The University of British Columbia's (UBC) Dairy Education & Research Centre, the Pacific Agriculture Research Centre and the Avian Research Centre in Agassiz, BC undertake research and development activities. Research is supported either directly from the producer associations or through research and development funds organized through the national marketing boards.

Dairy

In British Columbia, dairy producers support research undertaken at UBC's Dairy Education & Research Centre facilities in Agassiz. The Centre runs a dairy cattle operation that provides an actual farm setting for research purposes. Areas of research include: animal behaviour and welfare, animal nutrition, and animal reproduction and reproductive technologies. Revenues from the sale of milk and cattle cover the cost of the farming operation. Research expenditures are provided from UBC, government agencies and the dairy industry.

In addition, the dairy industry (BC Dairy Foundation, milk producers, DFC and WestGen) contribute over \$30,000 to the Animal Welfare Chair at UBC. This money helps to leverage large contributions from the National Research Council.

Poultry (Eggs, Chicken, and Turkey)

UBC's Faculty of Land and Food Systems, provides education and research facilities through the Avian Research Centre location at the Pacific Agriculture Research Centre in Agassiz, BC. The Centre is managed under a collaborative research agreement with the University of British Columbia and Agri-Food Canada. Research priorities for the centre include:

- Increasing production and feed efficiency
- Improving product quality and safety
- Developing environmentally friendly waste management strategies
- Assuring animal welfare and minimizing disease losses
- Improving quality of breeding stocks and conservation of genetic resources
- Promoting research in avian species as indicators of environmental health

7.6 Community Outreach

Public education and promotion campaigns – Product promotion, safe food handling, food preparation

The poultry and dairy producer associations allocate funds towards advertising media campaigns that promote the health and wellness benefits of dairy and poultry product and provide information on safe food handling and food preparation.

Different media are used to deliver these messages including print, radio, television, direct mail, internet and presentations at agricultural fairs, trade shows, distributing recipe booklets and brochures and advertising. For instance, trade shows attended include: West Coast Women's Show, Kid's Expo, Eat Vancouver, Eat BC Campaign, and the Vancouver Cherry Blossom Festival. Attendance also includes some of the following exhibitions held throughout the province: Abbotsford Agrifair, Prince George Exhibition, Vancouver Island Exhibition, Bulkley Valley Exhibition, and the Interior Provincial Exhibition.

7 Social Contribution of BC's Supply Management Industries

Another method used to reach the public is through mobile barns. Both the poultry and dairy industries have mobile barns that are taken to public events and schools throughout the province. The mobile barns provide an educational experience of farm activity using live demonstrations. The dairy industry's Mobile Dairy Classroom demonstrates with live cows the milking process while also providing education on how milk is produced and how the dairy system works.

Workshops and resources on the nutritional benefits of dairy and poultry are provided to teachers at elementary, middle and secondary school levels as well as nutritionists, dieticians, and health professionals. The BC Dairy Foundation offers the Elementary School Milk Program designed to encourage students to increase their consumption of milk through school-wide contests resulting in prizes for schools. In 2007, this program received assistance through the Province of British Columbia's, "Fridges in Schools" program which offered refrigerators to over 700 elementary schools for participating in the school milk program.

Initiatives to provide sponsorship support to the community include:

The marketing boards and producer associations support various organizations throughout the province. Organizations supported can be directly industry related (BC Outstanding Young Farmer Program), or they can provide a link with the health and wellness benefits of the product such as sponsorship of a fun run. Examples of community support follow.

The BC Outstanding Young Farmer Program is supported by all supply management commodities. The program is national with regional chapters with the purpose of recognizing outstanding achievements of young farmers between the ages of 18 – 39. Recognition is provided to those young farmers demonstrating achievements in conservation practices, production history, financial and management practices, and community contributions.

The BC Egg Marketing Board shares with the Canadian Egg Marketing Agency (CEMA) the sponsorship announced in July 2007 to provide a four-year sponsorship agreement with Hockey Canada and the Canadian Soccer Association. Approximately \$1 million will be provided to national team and grassroots programs to both sports. More recently, the BC Egg Marketing Board sponsored the 2009 School Team Division in the Vancouver Sun Run.

On behalf of the dairy producers, the BC Dairy Foundation sponsors the annual Milk Run for secondary schools. Schools make use of the Milk Run as an opportunity to educate students on the benefits of fund raising for charity. The top two schools receive \$500 from the BC Dairy Foundation as a donation for their charity.

Charity golf tournaments are held annually by the poultry boards to raise funds to support a variety of causes including the Union Gospel Mission, Life Recovery Rehab Centre, local food banks, and other not-for-profit organizations.



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MASSEY-FERGUSON 50

Multi-Power

Conclusions



The analysis presented in this study has shown that the supply managed commodities produce significant economic and social benefits for the British Columbian economy.

Supply management produces significant economic impacts for British Columbia

Economic impacts across the entire BCDEPI value chain are estimated to be \$1.6 billion in value-added, based on total value chain output of \$5.0 billion. The value-added produced by the BCDEPI value chain in British Columbia corresponds with approximately 0.8% of BC's GDP. The economic activities of the BCDEPI value chain were also responsible for the employment of approximately 28,375 individuals, providing \$893.7 million in annual salaries and wages.

Supply management produces additional long-term economic benefits for British Columbia

Supply managed system creates stability in the marketplace where consumer demand is met by supply. A benefit of this system is the ability to control demand and supply without getting into situations of product surplus or deficit. When demand and supply is in equilibrium, price volatility and over supply situations are avoided.

Rural communities with supply managed farming also benefit from the stability that comes from supply management. Local businesses who are suppliers to producers are more likely to receive payment for goods and services. The stability inherent in the supply management system is then indirectly transferred to rural community economies.

Supply management supports families and rural communities throughout British Columbia

Supply management producers are located in different regions of the province. The size of regional production and distribution is a function of the size of population settlements in each region. For the most part, the poultry industry (chicken (80%), table egg (75%), hatching egg (100%), and turkey (90%)), are located in the Fraser Valley with a smaller percentage of chicken and table egg production found in the Okanagan and Vancouver Island. The dairy industry has a somewhat different regional profile with two-thirds of the production occurring in the Fraser Valley and other producers spread throughout BC in the Peace River, Okanagan, Cariboo, Creston, and Vancouver Island.

Appendices



Appendix A

List of Sources

- Annual Report 2007, Canadian Egg Marketing Agency
- Annual Report, 2007, Canadian Hatching Egg Producers
- Annual Report, 2007, Canadian Turkey Marketing Agency
- Annual Report 2007, Chicken Farmers of Canada
- Annual Report 2007/2008 Dairy Year, BC Milk Marketing Board
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Appendix B

Economic Impact Data Sources

Multipliers

When using the Statistics Canada data, multipliers for the following industry aggregations were used:

NAICS 112A00: Animal Production (except Animal Aquaculture)

This subsector comprises establishments, such as ranches, farms and feedlots, primarily engaged in raising animals, producing animal products and fattening animals.

NAICS 311500: Dairy Product Manufacturing

This industry group comprises establishments primarily engaged in manufacturing dairy products.

NAICS 311615: Poultry Processing

This industry comprises establishments primarily engaged in slaughtering poultry and small game or preparing processed poultry and small game meat and meat by-products.

NAICS 3119A0: Other Miscellaneous Food Manufacturing

This industry comprises establishments, not classified to any other industry, primarily engaged in manufacturing food, including egg processing.

When using the BC Stats data, multipliers for the following industry aggregations were used:

NAICS 111 & 112: Crop and Animal Production

This subsector is the combination of both crop and animal production. It is comprised of establishments, such as farms, orchards, groves, greenhouses and nurseries, primarily engaged in growing crops, plants, vines, trees and their seeds (excluding those engaged in forestry operations), or establishments, such as ranches, farms and feedlots, primarily engaged in raising animals, producing animal products and fattening animals.

NAICS 311: Food Manufacturing

This subsector comprises establishments primarily engaged in producing food for human or animal consumption.

Output

Output data was obtained from CANSIM, which publishes output values based on farm cash receipts for producers, or value of shipments for processors. The specific CANSIM table is listed for each industry below.

Dairy Production: CANSIM Table #003-0008 – Cash receipts from milk and cream sold off farms

Chicken and Turkey Production: CANSIM Table #003-0018 – Production, disposition and farm value of poultry meat

Hatching and Table Egg Production: CANSIM Table # 003-0020 – Production and disposition of eggs

Dairy Processing: CANSIM Table #381-0016 – Provincial gross output, by sector and NAICS; British Columbia; Dairy product manufacturing [NAICS 311500]

Poultry Processing: CANSIM Table #381-0016 – Provincial gross output, by sector and NAICS; British Columbia; Poultry processing [NAICS 311615]

Eggs Processing: As egg processing is captured under NAICS 3119A0: Other Miscellaneous Food Manufacturing and aggregated along with several other unrelated activities, output data was obtained directly from BC's breaking and grading plants.

Output values were then applied to the appropriate industry multipliers to estimate direct, indirect, and induced output, value-added (GDP), exports, employment, labour income, and government revenues.

Appendix C

Economic Impact Modeling Methodology

In regards to the Input-Output (I-O) methodology, Statistics Canada provides the following guidance:

“The I-O model is a complex and detailed accounting model of the inter-industrial structure of the Canadian economy. Contrary to macro econometric and general equilibrium models, there are no money supply, no relative prices and no inflation in the I-O model. There are no limits on input supply and thus no bottlenecks occur in the model. The lack of relative prices means that there is no economic behaviour responding to scarce or limited resources.

The model says nothing about the ability of the economy to respond to increases in production in short periods of time. As with most other economy wide models, the I-O model does not automatically capture technological spin-offs and negative externalities such as environmental pollution, or positive externalities resulting from, for example, industrial clustering³³.

Effectively dealing with the limitations of the model requires experience and judgement. The results of modest shocks are most likely trustworthy. Large shocks simulating new demand or output may strain limited resources and cause price changes with difficult to predict economic impacts. The model is static, not dynamic, and therefore calculates a new “equilibrium” without specifying the path to get there.

However, in spite of its limitations, the I-O model does a remarkably good job of capturing the structure of the Canadian economy, a structure that appears to be relatively stable in the medium term. The simplicity of the model can also be an advantage as the results are relatively reliable and easy to understand. Large, theoretically sophisticated macroeconomic models are sometimes difficult to fit to the data and produce ambiguous, difficult to interpret results. For these reasons, I-O modeling often provides the most cost effective means of analyzing a given economic problem.”

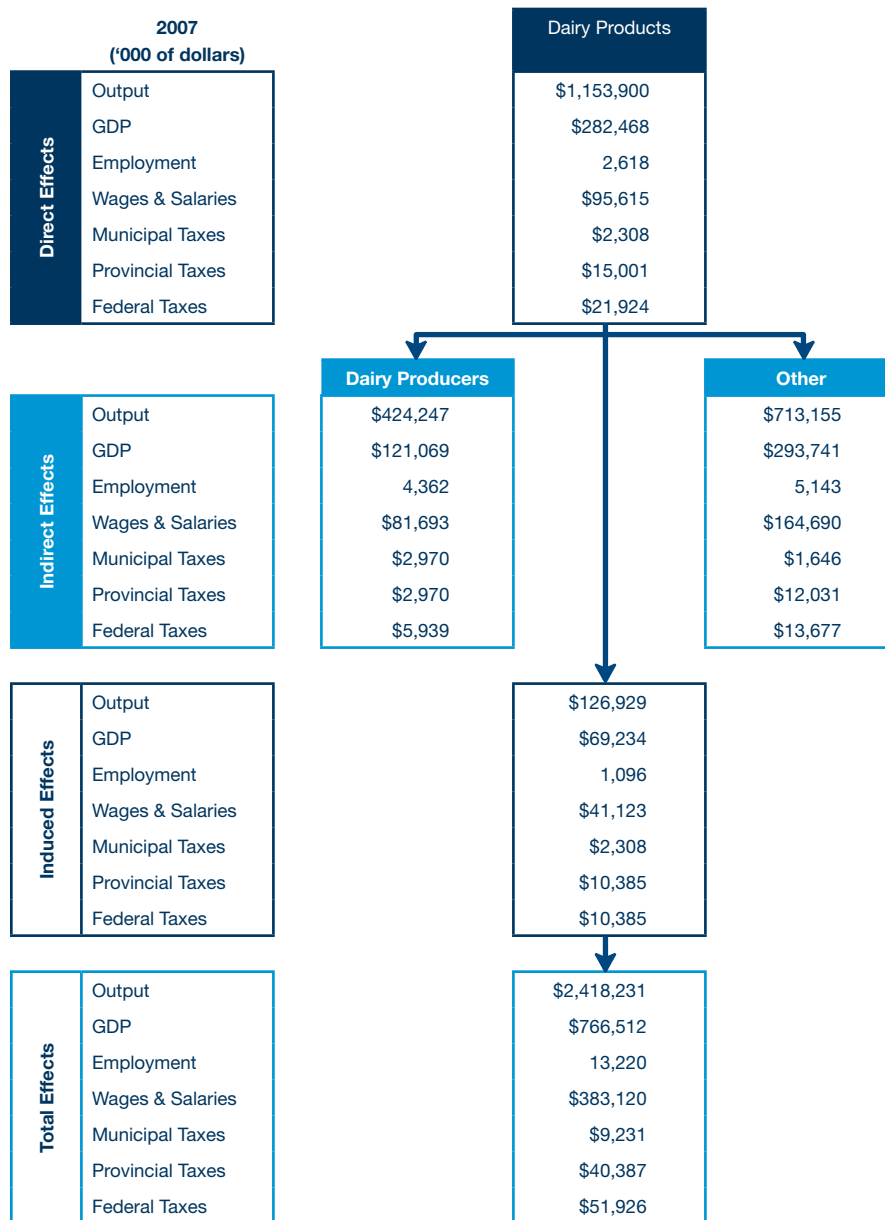
The multipliers provided by Statistics Canada and BC are estimated based on averages of industrial classifications that contain, but are not limited to, the supply management sectors. Therefore the multipliers provide only approximations and should be recognized as such.

33. The jargon externalities refer to costs or benefits that accrue outside the production process (i.e., external to the production process).

Appendix D

Economic Impacts of the BCDEPI Value Chain

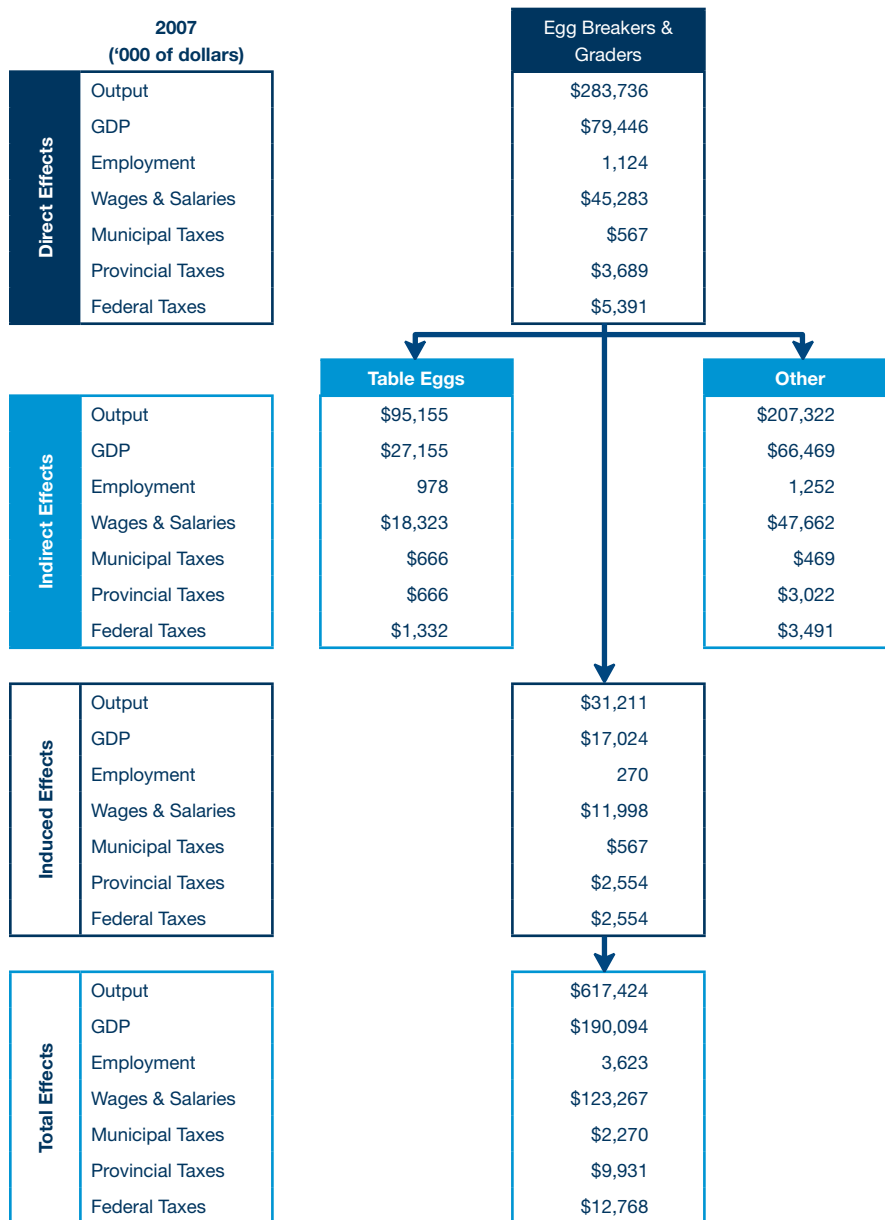
Dairy Value Chain



Poultry Processing

2007 ('000 of dollars)		Poultry Processing				
Direct Effects	Output	\$903,075				
	GDP	\$207,952				
	Employment	3,165				
	Wages & Salaries	\$144,128				
	Municipal Taxes	\$1,806				
	Provincial Taxes	\$11,740				
	Federal Taxes	\$17,158				
Indirect Effects	Output	Hatching Egg	Hatcheries	Chicken	Turkey	Other
	GDP	\$38,324	\$58,505	\$274,858	\$41,939	\$549,098
	Employment	\$10,937	\$13,472	\$78,437	\$11,968	\$228,081
	Wages & Salaries	394	140	2,826	431	3,718
	Municipal Taxes	\$7,380	\$9,337	\$52,927	\$8,076	\$132,298
	Provincial Taxes	\$268	\$117	\$1,924	\$294	\$1,009
	Federal Taxes	\$268	\$761	\$1,924	\$294	\$8,494
Induced Effects	Output	\$537	\$1,112	\$3,848	\$587	\$9,269
	GDP	\$99,338				
	Employment	\$54,185				
	Wages & Salaries	858				
	Municipal Taxes	\$33,187				
	Provincial Taxes	\$1,806				
	Federal Taxes	\$8,128				
Total Effects	Output	\$1,965,137				
	GDP	\$605,032				
	Employment	11,532				
	Wages & Salaries	\$387,332				
	Municipal Taxes	\$7,225				
	Provincial Taxes	\$31,608				
	Federal Taxes	\$40,638				

Table Egg Value Chain



Appendix E

Economic Impacts of BCDEPI Commodities

	Dairy	Chicken	Turkey	Hatching Egg	Table Egg
2007 Farm Cash Receipts (‘000 of dollars)	\$424,247	\$274,858	\$41,939	\$38,324	\$95,155
Direct Effects					
Output	\$424,247	\$274,858	\$41,939	\$38,324	\$95,155
GDP	\$121,069	\$78,437	\$11,968	\$10,937	\$27,155
Employment	4,362	2,826	431	394	978
Wages & Salaries	\$81,693	\$52,927	\$8,076	\$7,380	\$18,323
Municipal Taxes	\$2,970	\$1,924	\$294	\$268	\$666
Provincial Taxes	\$2,970	\$1,924	\$294	\$268	\$666
Federal Taxes	\$5,939	\$3,848	\$587	\$537	\$1,332
Indirect Effects					
Output	\$348,644	\$225,877	\$34,465	\$31,494	\$78,198
GDP	\$150,614	\$97,578	\$14,889	\$13,606	\$33,781
Employment	2,697	1,748	267	244	605
Wages & Salaries	\$77,939	\$50,495	\$7,705	\$7,041	\$17,481
Municipal Taxes	\$2,121	\$1,374	\$210	\$192	\$476
Provincial Taxes	\$7,636	\$4,947	\$755	\$690	\$1,713
Federal Taxes	\$9,758	\$6,322	\$965	\$881	\$2,189
Induced Effects					
Output	\$67,880	\$43,977	\$6,710	\$6,132	\$15,225
GDP	\$38,182	\$24,737	\$3,775	\$3,449	\$8,564
Employment	590	382	58	53	132
Wages & Salaries	\$19,758	\$12,801	\$1,953	\$1,785	\$4,432
Municipal Taxes	\$1,273	\$825	\$126	\$115	\$285
Provincial Taxes	\$5,939	\$3,848	\$587	\$537	\$1,332
Federal Taxes	\$5,515	\$3,573	\$545	\$498	\$1,237
Total Effects					
Output	\$840,771	\$544,712	\$83,114	\$75,950	\$188,578
GDP	\$309,865	\$200,753	\$30,632	\$27,991	\$69,500
Employment	7,649	4,956	756	691	1,716
Wages & Salaries	\$179,390	\$116,222	\$17,734	\$16,205	\$40,236
Municipal Taxes	\$6,364	\$4,123	\$629	\$575	\$1,427
Provincial Taxes	\$16,546	\$10,719	\$1,636	\$1,495	\$3,711
Federal Taxes	\$21,212	\$13,743	\$2,097	\$1,916	\$4,758
Multiplier Effect (Direct to Total)					
Output	1.98	1.98	1.98	1.98	1.98
GDP	2.56	2.56	2.56	2.56	2.56
Employment	1.75	1.75	1.75	1.75	1.75
Wages & Salaries	2.20	2.20	2.20	2.20	2.20
Municipal Taxes	2.14	2.14	2.14	2.14	2.14
Provincial Taxes	5.57	5.57	5.57	5.57	5.57
Federal Taxes	3.57	3.57	3.57	3.57	3.57

