



Canada's Agricultural Hub

AN ECONOMIC IMPACT ANALYSIS OF AGRICULTURE IN ABBOTSFORD

2022 Report



**Chamber of
Commerce**

abbotsford



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Message from the Chair of the Chamber Agriculture Committee

The Abbotsford Chamber of Commerce Agriculture Committee is pleased to release this report, “Canada’s Agricultural Hub – An Economic Impact Analysis of Agriculture in Abbotsford” on the economic impact of agri-business and agriculture support services in Abbotsford. Leveraging its central location in the Fraser Valley, Abbotsford acts a hub for the valuable spin-off economic activity generated from primary agriculture production.

This study updates our widely referenced 2008 report, “The Economic Impact of Agriculture in Abbotsford (market-based goods and services),” and explores how agriculture has changed. It asks the question - does agriculture play a greater or lesser role in the Abbotsford economy in 2020 compared to 2008?

Fundamentally, the Abbotsford Chamber of Commerce supports the agriculture sector, local farms and businesses, through the work of its Agriculture Committee and strategic interactions with the City of Abbotsford. A priority activity, identified by the Committee and Chamber Board, was to update the Economic Impact of Agriculture in Abbotsford study of 2008. The Chamber’s updated study was sponsored with support from the City of Abbotsford’s Economic Development Department and TD Bank and its Agriculture Services Department. The Chamber’s academic partnership with the University of the Fraser Valley (UFV) was guided by Dr. Garry Fehr, and with review support from Dr. Kelleen Wiseman, Academic Director and Manager, Master of Food and Resource Economics, Faculty of Land and Food Systems, The University of British Columbia. The Chamber’s Agriculture Committee provided oversight and project support to the research that was conducted throughout 2020, and the development of the report over the past year.

The results of this research are presented in this report. “Canada’s Agricultural Hub - An Economic Impact Analysis of Agriculture in Abbotsford (2022)” shows that agriculture plays a larger role in the Abbotsford economy today than it did in 2008. It reveals how the agriculture industry is driving economic growth and making an impact in our City and region, and for our province and country.

We look forward to presenting this report and distributing it among our members, stakeholders, and public policy decision makers, as well as to it being used to raise awareness and education of the critical value of this sector for communities, workers and families.

Finally, the Chamber Agriculture Committee wishes to thank Dr. Fehr and Dr. Wiseman for their oversight on this report, and Mark Robbins for his work on the report and bringing this project to completion.

Elena Middlemass

Chair - Agriculture Committee
Abbotsford Chamber of Commerce

Executive Summary

Abbotsford has grown from a small town in the early 1900's to the fifth largest community in the Province of British Columbia. Agriculture has been driving that growth and continues to provide stable, expanding support for the local economy. In 2008, the Abbotsford Chamber of Commerce endeavored to discover the significance of its Agriculture sector by answering these questions: What does Agriculture contribute to the Abbotsford economy? How many jobs does Agriculture support?

The resulting report titled, "The Economic Impact of Agriculture in Abbotsford (market-based goods and services)," based on the 2006 Census of Agriculture results, found that agriculture drove \$1.8 Billion in economic activity and supported 11,000 full time equivalent jobs in Abbotsford. These jobs represented 1/5 of all jobs in Abbotsford and 1/4 of all private sector jobs in Abbotsford at that time.

The study is based on 2019 Statistics Canada data, 2020 surveying of local farms and agriculture businesses, and using the results of the 2020 Agriculture Land Use Inventory to determine the economic impact of Agriculture to the local economy.

The high-level results indicate that:

Agriculture is responsible for \$3.83 billion in economic activity and over 16,000 full time equivalent jobs.

Today, **Agriculture in Abbotsford** supports **\$3.83 billion in economic activity vs \$1.8 Billion in 2008** and **Over 16,000 Full Time Equivalent Jobs vs 11,000 in 2008**

In Abbotsford, according to the Statistics Canada Labour Force Survey, 16,000 full time jobs represents 23% of all jobs in Abbotsford and 29% of all private sector jobs in Abbotsford.

Today, **Agriculture** supports **23% of all jobs in Abbotsford**

compared to **20% in 2008**, and

29% of private sector jobs in Abbotsford compared to **25% in 2008**



The pace of growth in agriculture is driving these results. This report shows that, from 2005 to 2019, the compounded annual growth rate of agriculture (inflation removed) was 3.49%.

In comparison, the compounded annual growth rate of the population was 1.26%. This indicates that the Agriculture sector grew twice as fast as the population of Abbotsford over the last 15 years.

The Agriculture sector has grown **twice** as fast as the population of Abbotsford over **the last 15 years**

The 'hub' effect of Abbotsford has increased with **45%** of its agribusiness activity driven by farms outside of the City vs **40% in 2008**

Abbotsford continues to be the hub for agri-businesses and value-added activities in the Fraser Valley. Forty-five percent of the agri-business and value-added activity in Abbotsford is supported by farms outside of Abbotsford.

Consequently,

Abbotsford relies more on Agriculture today to drive the economy and employ their citizens than it did 15 years ago.



Introduction

Abbotsford has grown to be the fifth largest City in British Columbia with a population of approximately 150,000 people. Agriculture is the main industry fueling that growth and provides stable support for the local economy.

In 2008 the Abbotsford Chamber of Commerce in partnership with the BC Ministry of Agriculture, undertook a study called, “the Economic Impact of Agriculture in Abbotsford (market-based goods and services).” This study found that agriculture in Abbotsford supports 11,300 full time jobs and \$1.8 Billion in annual expenditures. Abbotsford also had the highest annual gross farm receipts of any Local Government in BC, with \$853,780,000¹. In addition to high farm production and receipts, the study determined that Abbotsford is a hub for agribusiness activity in the Fraser Valley.

Building upon the 2008 report, this study presents an updated view and analysis of the economic impact of the agriculture sector for Abbotsford. The Chamber has partnered with the City of Abbotsford and TD Bank as sponsors for this report and received research support from the University of the Fraser Valley and University of British Columbia to produce the updated report.

Analysis and data from the report will be used to inform the Abbotsford Chamber of Commerce's advocacy on public policy impacting the City's agricultural industry as well as related business interests. The study is intended to be a valuable source from which the Chamber, City, industry, stakeholders, and partners will draw upon to make evidence-based decisions.

The study was overseen by a steering committee that included representatives from the Abbotsford Chamber of Commerce and the University of the Fraser Valley, and Mark Robbins (author of the previous study). The University of British Columbia assisted the steering committee with additional resources and academic review. The following individuals formed the steering committee:

- » Katerina Anastasiadis, CEO, Abbotsford Chamber of Commerce.
- » Dr. Gary Fehr, Associate Vice-President, Research, Engagement & Graduate Studies, University of the Fraser Valley.
- » Mark Robbins, Economic Impact of Agriculture in Abbotsford Study (2008) Research Director and Report Author.
- » Dr. Kelleen Wiseman, Academic Director and Manager, Master of Food and Resource Economics, Faculty of Land and Food Systems, The University of British Columbia.

The research was conducted with the following objectives:

- » To determine the economic benefit of agriculture to the City of Abbotsford, as measured by the following:
 - Number of full-time equivalent jobs supported by agriculture
 - Average hourly wage and the average annual wage that agriculture supports in Abbotsford
 - Proportion of the agri-business sector supported by farms from outside the City of Abbotsford
 - Percentage of private sector jobs in Abbotsford supported by agriculture
 - Annual expenditures in the local economy driven by agriculture

1 2016 Census of Agriculture, Statistics Canada.

- » To compare the 2020 results with the 2008 results regarding the changes in:
 - the economic impact of agriculture to the City of Abbotsford
 - the level of jobs and wages supported by agriculture
 - the real agriculture output (adjusted for inflation)
 - the compounded real growth in agriculture output compared to the compounded growth in the population of Abbotsford
- » To employ consistent methodology with the 2008 study, “The Economic Impact of Agriculture in Abbotsford (market-based goods and services),” completed by the Abbotsford Chamber of Commerce and the British Columbia Ministry of Agriculture in 2008.

Explanation of Terms and Dates

Census of Agriculture and Data Reporting

Statistics Canada conducts a Census of Agriculture every 5 years – 2006, 2011 and 2016. The financial information reported by farmers and included in the census report is from the year 2005, 2010, and 2015.

The 2008 report was published in 2008 and based on the 2006 census data and thus 2005 financial information reported by farmers.

This 2022 report is based primarily on a 2019 Statistics Canada estimate of the agriculture industry economic activity. Additional data sources included the following:

1. Census of Agriculture;
2. 2020 Survey of the agribusiness sector based on 2019 financial information; and,
3. 2020 Land Use Inventory of the City of Abbotsford conducted by the BC Ministry of Agriculture.

Growth

Growth is referred to in the report using the following terms:

Nominal Growth: Nominal Growth rates are computed using change of “nominal” values over time. Nominal values include both inflation (change in prices) and growth of production (change in units of production). Thus, if product price increases but production units do not increase, nominal growth rate will be positive.

Real Growth: Real growth rates are computed using change of “real” values over time. Real values have been adjusted for inflation (i.e., inflation or price change has been eliminated from these values). When comparing growth rates over time, real growth rates is the more common method as it isolates the growth of production units versus the growth of production due to increased prices and supports a clearer year to year comparison. Thus, if product price increases but production units do not, real growth will show a no change in growth.

Average Annual Compounded Growth: This term refers to values derived using a method that weights and smooths the annual growth rate to develop a growth rate over a time period longer than one year. The resulting average annual compounded growth is a more accurate growth rate value than a basic average of each year growth. This method is similar to reporting on business investments.

Comparison to Population Growth: Agriculture growth is connected to population growth. Commodities under regulated marketing such as poultry and dairy, tend to grow at the same rate as the population. Other commodities grow by increasing domestic consumption and by expanding exports. It is helpful to consider the growth in agriculture considering the general growth in population.

Economic Impact as Measured by Economic Activity

Economic Impact is referred to in this report using the following terms:

Total Economic Activity: Sum of direct economic activities and indirect economic activities.

Direct Economic Activities: The direct economic activity of the sector involves the direct

spending such as sales and jobs related to the businesses in the sector (i.e., agribusiness sales and paying wages to employees).

Indirect Economic Activities: The indirect economic activity of the sector involves 'spin-off' benefits, induced impacts, or secondary impacts such as businesses buying supplies and services, and their employees spending their wages which creates secondary economic activity and community job creation.

Relationship between the Direct and Indirect Economic Activities: The 2008 study defined a relationship between the direct and indirect economic activities to be 1 to 1 and provides references to detailed studies that supports this relationship. This means that for every dollar of expenditure and fulltime job created by the agriculture and agri-business sector, there is an additional dollar of indirect expenditure and fulltime job created in the overall Abbotsford economy. No evidence was found to suggest that this relationship has changed since the 2008 study was conducted, so a similar approach is used in this current study.

Multiplier Effect

The multiplier and multiplier method in this study is described in the following term and description:

Multiplier: The multiplier is the value that estimates the relationship between an input and an output. In this study, the multiplier defines the relationship between initial increase in spending in one sector (i.e., agriculture) and the increase in total economic activity that results in a different sector or region (i.e., Abbotsford) from that initial increase. The 2008 study defined a multiplier of 2 meaning that a \$1 dollar increase of expenditure in the agricultural sector provides an estimated \$2 dollar increase in expenditure in the Abbotsford region. This same multiplier was used for the 2021 study.

Multiplier Analysis Method: The multiplier analysis method is frequently used to determine the economic impact of a select sector (i.e., agriculture) on a region (such as Abbotsford). This method involves the following steps:

- i. Estimation of the direct economic activity created by the sector; and,
- ii. Application of a multiplier to the direct economic activity to determine the total economic activity in the region.

The accuracy of the direct economic activity estimation is crucial to the method and final estimate.

1. Background

The Abbotsford Chamber of Commerce 2008 study, “the Economic Impact of Agriculture in Abbotsford (market-based goods and services),” found that agriculture was the dominant industry in Abbotsford.

The goal of the updated report (2022) titled, “Canada’s Agricultural Hub – An Economic Impact Analysis of Agriculture in Abbotsford,” is to answer the following overarching questions:

- » What would be the impact on the community if a specific industry ceased to exist?
- » How many jobs would be lost and how much in expenditures would be lost if farming ceased to exist in Abbotsford?
- » Has Abbotsford become more reliant on agriculture to provide jobs and economic activity?

This 2022 report uses the most recent data available to compare the industry presently to where it was at the time of the 2008 study. In the subsequent sections we explore the findings and the answer to this key question.

1.1 Continued importance of agriculture in the Abbotsford region

Based upon 2016 Census Data, Abbotsford has the largest value of farm gate receipts per hectare relative to other Local Government areas in British Columbia. Farm gate receipts for Abbotsford are approximately twice the amount of the next highest agriculture producing communities of Chilliwack and Langley.

TABLE 1. FARM GATE RECEIPTS OVER TIME IN ABBOTSFORD, LANGLEY, AND CHILLIWACK

REGION WITHIN BC	HECTARES IN ALR	FARM GATE RECEIPTS		
		2005 ²	2010 ³	2015
Abbotsford	26,055	\$558 m	\$640 m	\$853 m
Langley	23,423	\$228 m	\$340 m	\$277 m
Chilliwack ⁴	26,194	\$259 m	\$360 m	\$462 m

Abbotsford is also the most intensely farmed area in North America. The farm gate receipts on a per hectare basis exceeds that of other areas known for agriculture production; the Niagara peninsula and Fresno Valley California^{5,6}.

FIGURE 1. FARM GATE SALES PER HECTARE IN ABBOTSFORD, BC, NIAGARA, ONTARIO, AND FRESNO COUNTY, CALIFORNIA, USA (NOMINAL \$CDN)



2 Census of Agriculture, 2006, Archived

3 Census of Agriculture, 2016

4 Census of Agriculture, Census Consolidated Subdivision Fraser Valley E.

5 www.bankofcanada.ca/rates/exchange/annual-average-exchange-rates/

6 Fresno County California has the highest farm gate receipts in California. It also has the largest cultivated area with almonds and various grape and vegetable crops and does not have much low value production such as pasture.

1.2 Abbotsford: The 'hub' for agriculture in the Fraser Valley

High farm gate receipts combined with a central location in the very productive Fraser Valley farming area has contributed to Abbotsford becoming the 'hub' of agriculture support services and value-added businesses in the Fraser Valley. The Fraser Valley region (the Fraser Valley Regional District) represents 2.3% of the farmland and 14.7% of the farms in BC. This small area contributed 39.4% of the Farm Gate Receipts in BC and employed 24.4% of all farm employees working in the province. These statistics are summarized in Table 2 below.

TABLE 2. THE IMPORTANCE OF AGRICULTURE IN THE FRASER VALLEY RELATIVE TO THE REST OF BC⁷

CENSUS OF AGRICULTURE DATA	2006	2011	2016	SHARE OF BC 2016
Total Farmland Area (ha)	56,603	63,838	60,853	2.3%
Number of Farms (#)	2,567	2,743	2,576	14.7%
Average Farm Size (ha)	22.1	23.3	23.6	n/a
Total Farm Operators (#)	3,920	4,235	3,915	14.8%
Total Farm Capital	\$5,582,816,220	\$7,490,504,472	\$8,721,165,323	23.2%
Total Gross Farm Receipts	\$921,475,274	\$1,119,984,565	\$1,468,505,390	39.4%
Total Number of Employees	n/a	10,746	10,856	24.4%

Notably, in the period from 2005 to 2019, the compounded annual real growth rate of agriculture (inflation removed) was 3.49%. In comparison, the compounded annual growth rate of the population of Abbotsford during that same period was 1.26%.

1.3 The challenge of estimating agricultural activity in the Abbotsford region

A challenge in estimating the economic impact of agriculture in Abbotsford is identifying the unusually large agri-business and value-added sector (large in comparison to other farming communities in BC and Canada) connected to agriculture and estimating that sector's economic contribution. Primary agriculture economic activity can be estimated using farm gate receipts. However, applying the multiplier to this primary agriculture sector alone may underestimate the economic contribution of this agri-business and value-added sector.

To balance this concern, added data sources were used in the 2008 and 2022 studies to ensure the agri-business and value-added sector is represented. These data sources include Census of Agriculture, Abbotsford Chamber of Commerce survey of agri-businesses and valued added firms in the Abbotsford regions, Census of Agriculture annual revenue and operating expenses estimates, BC Ministry of Agriculture 2020 Land Use Inventory of Agriculture in the Abbotsford region, and direct input from producers, processors, and industry experts.

⁷ Source: from Agriculture in Brief, FV Regional District 2016, https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/statistics/census/census-2016/aginbrief_2016_all_province_region_regional_districts.pdf

2. Objective and Methodology

The overall objective of this study was to obtain an updated view of the impact of agriculture and more specifically, to answer the following questions:

- » What does agriculture contribute to the Abbotsford economy?
 - How many jobs does it support? How much in expenditures are there?
- » Is agriculture still a driving force for the Abbotsford economy?
 - Is Abbotsford more or less reliant on agriculture to provide jobs and economic activity?

2.1 Methodology: Estimating economic activity

To build a view of the economic impact of agriculture on the City of Abbotsford and provide answers to these questions, the following methodology was used:

- i. Estimation of the Direct Economic Activity of the Primary Agricultural Sector using secondary research sources.
- ii. Estimation of the Direct Economic Activity of Agribusiness and Value-Added Firms Sector using secondary research and primary research sources including a survey of the agri-business sector.
- iii. Estimation of the Total Economic Activity (direct and indirect) by applying a multiplier to the direct economic activity of these two sectors.

The use of this methodology combined with multiple primary and secondary data sources, builds a broader and deeper view of the economic impact of agriculture on Abbotsford.

2.2 Estimating direct economic activity of the primary agricultural sector using secondary data

Statistics Canada⁸ does a Census survey every five years that provides updated information on revenues, employment, and operating expenditures in farming communities.⁹ The financial information reported by farmers and included in the census report is from the year prior to the census year. In addition, Statistics Canada also conducts annual updates of farm cash receipts and operating expenses and depreciation¹⁰ of the agriculture industry for regions such as the Fraser Valley Regional District.

This was used to develop the direct economic activity values for the primary agriculture sector for the 2021 study.

8 CPI All Items

<https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1810000401&pickMembers%5B0%5D=1.26&cubeTimeFrame.startMonth=08&cubeTimeFrame.startYear=2019&cubeTimeFrame.endMonth=12&cubeTimeFrame.endYear=2019&referencePeriods=20190801%2C20191201>

9 Source: Statistics Canada and Adapted from Statistics Canada. Census of Agriculture, 2016.

10 Farm Cash Receipts – Annual

<https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3210004501&pickMembers%5B0%5D=1.11&cubeTimeFrame.startYear=2005&cubeTimeFrame.endYear=2009&referencePeriods=20050101%2C20090101>

2.3 Using a “multiplier” to estimate the total economic activity for Abbotsford resulting from the agricultural sector

The “multiplier” is a value used to estimate the relationship that exists between input and output in an economy. In this study, the input is the direct economic activity from the agricultural sector and the output is the total economic activity resulting from the agricultural sector for the City of Abbotsford. In other words, the multiplier brings in the indirect effects of the agricultural sector. The 2008 study defined a multiplier of 2, implying that that a \$1 dollar increase of expenditure in the agricultural sector results in an estimated \$2 dollar increase in expenditure (\$1 direct and \$1 indirect) in the Abbotsford region. This same multiplier value of 2 was used in the 2021 study and was viewed as reliable for estimating a standard relationship between direct and indirect economic activity sourced from the agricultural sector.

A more detailed discussion on the multiplier effect and indirect or secondary benefits is presented in Appendix A.

2.4 Is everything included? Measuring economic activity of the agri-business and value-added sector

The unique characteristic of an agri-business hub means the size of the agri-business and value-added sector in Abbotsford is larger than would normally be found in other farming communities. Therefore, using a standard approach and estimating only the indirect benefits of a typical agriculture community would miss a large part of the agri-business and value-added sector in Abbotsford. Thus, additional approaches beyond those used in primary agriculture economic activity must be used to estimate this sector’s economic activity to ensure the full impact of the sector. These approaches and data sources include the 2020 Abbotsford Chamber of Commerce Survey of Agri-businesses and Value-added firms, Census of Agriculture 2019 annual revenue and operating expenses estimates, BC Ministry of Agriculture 2020 Land Use Inventory of Agriculture¹¹ in the Abbotsford region, and direct input from producers, processors, and industry experts. The approaches are detailed below.

Approach 1: Estimating the size of the agri-business sector

The approach was to estimate:

1. Size of the agri-business sector in Abbotsford; and,
2. Portion of the sector supported by farms within Abbotsford municipal boundaries.

The definition of the agri-business sector used in this study is:

- » Businesses where most of their business is with the agriculture sector.

The Census of Agriculture information on the operating expenditures reported by Abbotsford farmers was used to estimate the portion of the agri-business sector supported by farmers in Abbotsford. The Ministry of Agriculture Land Use Inventory 2020 survey of Abbotsford, and direct industry input was used to estimate the portion of value added attributed to agriculture production in Abbotsford. The balance of the economic activity in the agri-business and value-added sector was defined as supported by farms outside Abbotsford.

¹¹ <https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment/strengthening-farming/planning-for-agriculture/agricultural-land-use-inventories>

Approach 2: Surveying the agri-business and value-added agriculture sector

The primary approach involved identifying the different types of agri-business activities in Abbotsford, surveying the companies to obtain the basic economic information (revenues, payroll, and jobs) and then aggregating the results to estimate the total agri-business sector. In short, this study relied on data obtained directly from agri-businesses.

The Abbotsford Chamber conducted a survey of the agri-business and value-added agriculture sector in Abbotsford. The sector was divided into different types of agri-businesses and each type was surveyed separately. The survey was very brief, asking the businesses to provide only key data such as gross revenues, total payroll, and number of full and part time employees. The results from this survey were to feed directly into an estimate of the total economic impact of the agriculture sector in Abbotsford.

The 2020 Abbotsford Chamber survey was developed using the online survey application of Constant Contact with surveys being distributed by email and regular mail. The types and numbers of agribusinesses surveyed is listed below.

TABLE 3. THE CATEGORY AND NUMBER OF AGRIBUSINESSES SURVEYED IN 2006 AND 2019

CATEGORY	2006	2019
Feed Mills/Fertilizer	5	6
Farm Equipment	11	12
Machinery Repair	12	12
Farm Gate Services	8	13
Agriculture Supplies	13	52
Veterinary Services	2	4
Industry Associations	26	28
Packaging/Processing Berry	6	14
Packaging/Processing Dairy	3	4
On-farm Dairy Processing	2	1
Packaging/Processing Poultry	5	5
Packaging/Processing Vegetables	2	2
Packaging/Processing - Other	10	31
Poultry Hatcheries and Supplies	7	6
Farm Construction - Builders	7	10
Farm Construction - Materials	5	15
Livestock Hauling	5	5
Other Services	20	44
	149	263
Responses	35	39
Response rate	26%	13%

For the 2008 survey, 149 agribusinesses were identified and surveyed. For the 2019 update, 263 agribusinesses were identified. The response rate to the survey for the 2008 study was sufficient to provide an accurate estimate of the size and employment in the different agri-business sectors. Unfortunately, the survey for the 2019 report had an insufficient response rate for a reliable estimate in some of the sub-sectors of agribusinesses. Thus, the study made estimates based on industry experts who were familiar with the sector and could provide reliable input from which estimates could be made.

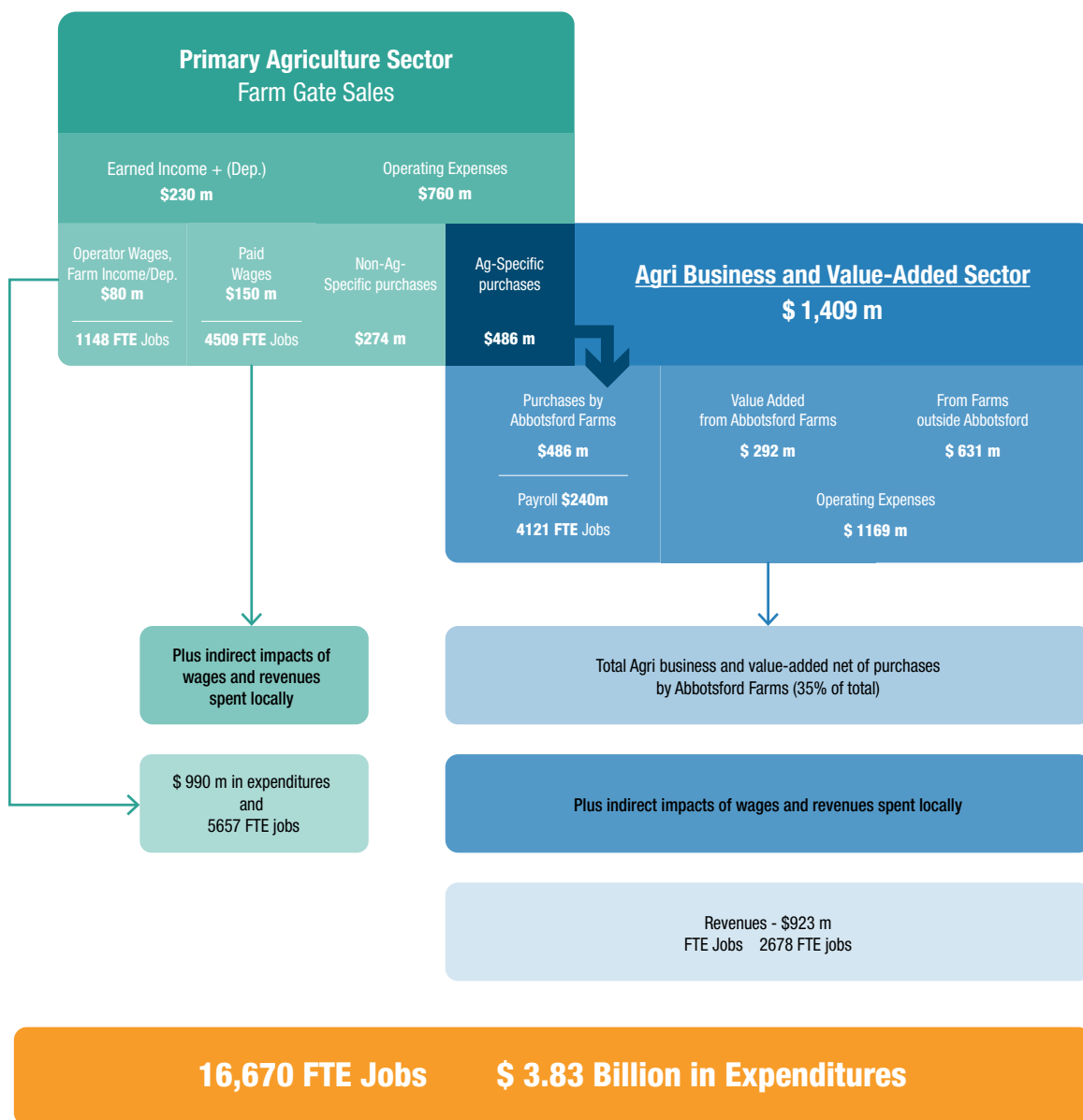
Details of the methodology used to estimate each sector are included in Appendix B.

A Copy of the Constant Contact Survey is in Appendix C.

3. Results: Economic Impact of Agriculture in Abbotsford

This study reveals that the economic impact of agriculture in Abbotsford is estimated at \$3.83 billion in expenditures and 16,670 FTE jobs. These values are based upon direct economic activity of primary agriculture sector (farm gate sales) and agribusiness sector to estimate total economic impact to the City of Abbotsford.

FIGURE 2. ECONOMIC IMPACT OF AGRICULTURE IN ABBOTSFORD M = MILLION



3.1 Flow chart summary and explanation

Table 3 summarizes the results in a flow chart. The flow chart is divided into two streams of economic activity, the on-farm production activities (green) and the agri-business value-added activities (blue).

Primary agriculture sector

In the primary agriculture sector (on the farm side), farms in the Abbotsford region produced \$990 million in farm gate receipts which was used to purchase \$760 million in operating expenses and pay \$277 million in wages and income (including depreciation).

- » The **operating expenditures** are split into non-ag-specific goods and services (\$274 million) used for office expenses, insurance, interest and other business services and ag-specific operating expenses (\$486 million) such as fertilizer, seed, equipment repair and other expenses. The ag-specific operating expenses are part of both the farm gate sales as well as the agri-business and value-added revenues. To prevent double counting, ag-specific purchases are considered on the farm gate side and deducted from the agribusiness side.
- » The **wages/income expenses** are split into paid wages (\$150 million) that is equivalent to 4,509 FTE farm employee jobs and operator wages/farm income/depreciation that is equivalent to 1,148 FTE farm operator jobs.

Agri-business and value-added agriculture sector

In the agri-business and value-added agriculture sector, firms from this sector that are in the Abbotsford region had \$923 million of revenue i.e. \$1,409 million based upon estimated value minus ag-specific operating expenses (\$486 million that are subtracted to avoid double counting of revenue as they are already included in primary agriculture sector revenue) and 2,678 FTE jobs (.65 X 4,121).

Total economic impact of agriculture

A total of \$3.83 billion in economic activity and 16,670 in FTE jobs in the Abbotsford region are connected to the economic activity of these two agriculture sectors. These values are developed by summing the direct economic activity and FTE from each sector and applying the multiplier of 2.¹²

Explanation of flow chart

The following is a verbal explanation of the flow chart. The farm side generated \$990 million in farm gate receipts which was used to purchase \$713 million in operating expenses and pay \$277 million in wages and income (including depreciation). Paid wages of \$150 million supported 4,509 FTE jobs while earnings supported 1,148 full time farm operators. Indirect impacts of this economic activity are estimated at an additional \$990 million in expenditures and 5,657 jobs. The agri-business side, minus revenues from Abbotsford farm operating expenses, generates \$923 million (\$1,409 million - \$486 million) in revenues and supports 2,678 FTE jobs (.65 X 4121). The indirect impacts add an additional \$923 million in expenditures and 2,678 FTE jobs.

The total economic impact comes from adding the direct revenues, \$990 million from the farm side and \$923 million from the agri-business and doubling it to cover indirect impacts. The total is [\$990 million + \$923 million + \$990 million + \$923 million] or \$3.83 billion annually.

¹² Total economic activity = (\$990 + \$923) X 2 = \$3.83 Billion annually. Total FTE jobs = (5648 + 2678) X 2 = 16,670.

The total jobs supported is the sum of the direct jobs, 5,648 from the farm side and 2,678 from the agribusiness side, and the indirect jobs. The estimate of the total FTE jobs supported by agriculture is $[5,648 + 2,678 + 5,648 + 2,678] = 16,670$.

The agri-business sector reported a payroll of \$240 million supporting 4,121 full time equivalent jobs. This represents an average salary in the agribusiness sector of \$58,000.

3.2 Avoiding double counting

The estimate of the agri-business sector includes the input cost of products grown on farms in Abbotsford which are already counted under farm production. To avoid double counting raw product for the agribusiness sector, the farm gate value of the inputs was subtracted from the estimate of the size of the agribusiness sector

3.3 Agri-business estimate

The 263 companies identified in 2020 were a 74% increase over the 149 identified in the 2006 study. Much of the growth was in companies that provided supplies and services to the agriculture sector. It is important to recognize that these companies tend to be smaller in nature than the large agriculture supply companies.¹³

3.4 Economic activity from agriculture primary sector

The Table 4 below provides detail for the economic activity values for the primary agriculture sector farm gate sales, income, and expenditures.

TABLE 4. CENSUS OF AGRICULTURE INTERIM ESTIMATES FOR 2019

FARM PRODUCTION		\$ MILLION
Farm Gate Sales 2019 (Statistics Canada, 2019)		
BC Farm Gate Receipts 2019		\$4,220
Abbotsford's portion of BC Farm Gate Receipts ¹⁴ Or viewed as	23.45%	
Fraser Valley (FV) Regional District Farm Gate Sales 2019		\$1,546
Abbotsford's portion of FV Regional District ¹⁵	64%	
Estimated Farm Gate Sales for Abbotsford 2019		\$990
Operating Expenses as a % of Farm Gate Sales (\$990 million: 2019 Stats Canada)¹⁶		
Farm Specific	49%	\$486
Non-Farm Specific	28%	\$274
Paid Wages	15%	\$150
Income + Depreciation	8%	\$80
Estimated Operating Expenses 2019		\$990

13 Corroborating evidence that there are more food and agriculture related service and processing companies are found in the City of Abbotsford's business license department where there was a five-fold increase in the number of companies registered in 2019 vs 2008.

14 Percent applied to BC Farm Gate Receipts 2019 value (23.45%) and Percent applied to Fraser Valley (FV) Regional District Farm Gate Sales 2019 (64%) to obtain Abbotsford specific values were based upon of 2016 Census data computations of proportion.

15 Percent of BC Farm Gate Receipts 2019 based upon 2016 Census data.

16 Proportion of farm gate receipts used to estimate farm specific expenses, on-farm specific expenses, wages, and income were using the percentage as applied to Abbotsford farm gate receipts.

Full Time Equivalent Jobs from Earned Income

Farm operators reporting (based on hours reported per week) (.25 if < 20hrs) (.5 if 20 to 30 hrs.) (1 if > 30 hrs.)	4,509
---	-------

Total Jobs - Farm Production	5,657
-------------------------------------	--------------

Full time Equivalent Jobs from Wages Paid

Employers reported - adjusted to FTE Jobs (.4 for seasonal) (.5 for part time) (1 for full time)	4,509
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Total Jobs - Farm Production	5,657
-------------------------------------	--------------

3.5 Economic activity from agribusiness and value-added agriculture sector¹⁷

TABLE 5. LIST OF CATEGORIES OF AGRIBUSINESSES IN ABBOTSFORD AND THE REVENUES, PAYROLL, AND NUMBER OF FTE JOBS IN EACH CATEGORY

CATEGORY	TOTAL REVENUES	MINUS FARM GATE VALUE	NET VALUE-ADDED AGRI BUSINESS	TOTAL PAY-ROLL	FTE
	(\$1,000's)		(\$1,000's)	(\$1,000's)	
Feed Mills / Fertilizer	\$240,000		\$240,000	\$14,000	225
Farm Equipment	\$180,000		\$180,000	\$16,000	260
Machinery Repair	\$5,200		\$5,200	\$1,260	20
Farm Gate Services	\$38,000		\$38,000	\$9,000	160
Agriculture Supplies	\$92,000		\$92,000	\$10,000	180
Veterinary Services	\$15,000		\$15,000	\$3,200	38
Industry Associations	\$45,000		\$45,000	\$16,000	252
Processing - Berry	\$158,000	\$60,000	\$98,000	\$27,000	650
Processing - Dairy	\$511,000	\$316,000	\$195,000	\$33,000	500
Processing - Poultry	\$224,000	\$101,000	\$123,000	\$30,000	450
Processing - Vegetables	\$68,000	\$33,000	\$35,000	\$7,700	140
Processing - Other	\$44,000		\$44,000	\$6,660	117
Poultry Hatcheries/Supplies	\$94,000		\$94,000	\$25,000	450
Farm Construction/Building	\$35,800		\$35,800	\$4,300	85
Farm Construction/Equipment	\$61,000		\$61,000	\$11,300	186
Livestock Hauling	\$700		\$700	\$490	8
Other Farm Services	\$107,000		\$107,000	\$25,000	400
	\$1,918,700	\$510,000	\$1,408,700	\$239,910	4,121

¹⁷ Values for the agribusiness sector were developed using a combination of survey responses, expert /industry input and Statistic Canada reports. Notes to the development of the values for each sector are provided in Appendix B.

TABLE 6. ADJUSTMENTS TO VALUES TO AVOID DOUBLE COUNTING AND ENSURE CORRECT PROPORTION¹⁸

Minus Farm Specific Expenditures	\$486,000		
Minus Payroll for Farm Specific Exp (35%)		\$83,969	
Minus FTE Jobs for Farm Specific Exp (35%)			1,443
Net Economic Activity from Sector	\$922,700	\$155,941	2,678

TABLE 7. MULTIPLIER METHOD APPLIED TO DIRECT ECONOMIC ACTIVITY TO ESTIMATE TOTAL ECONOMIC IMPACT OF AGRICULTURE TO THE CITY OF ABBOTSFORD

	Revenue	FTE
Economic Activity from Agriculture (Primary Production) Sector	\$990,000	5,657
Net Economic Activity from Agribusiness Sector	\$922,700	2,678
Sum: Total Direct Economic Activity	\$1,912,700	8,335
Apply Multiplier (X 2) equals		
Total Economic Activity	\$3,825,400	16,670

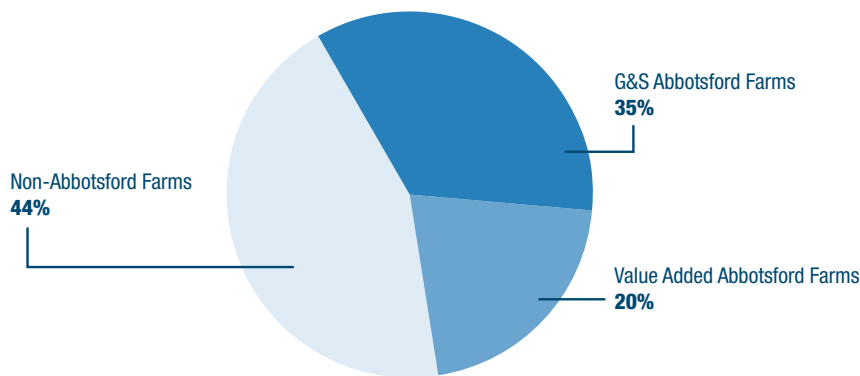
3.6 Abbotsford as an agri-business and a value-added 'hub'

To better understand the 'hub' impact on agribusiness in Abbotsford it is important to separate the total agri-business sector into the portion that is supported by Abbotsford's farm production (Ag-specific purchases and value added to Abbotsford production) and the portion that is supported by farms outside of Abbotsford.

From the total of \$1,409 million in value added and agri-business sector, \$292 million is from adding value to Abbotsford production, \$486 million is from direct purchases by Abbotsford farms leaving the balance, \$631 million being supported by farms outside of Abbotsford.

Below is a graphic representation of the source of the value-added and agri-business sector.

FIGURE 3. SOURCE OF BUSINESS FOR ABBOTSFORD AGRIBUSINESS AND VALUE-ADDED SECTOR



Note: The revenue for approximately 44% of the agribusiness sector in Abbotsford originates from farms outside Abbotsford.

¹⁸ To prevent double counting, ag-specific expenses (\$486 million) are considered revenues on the primary agriculture sector and deducted from the revenues of the agri-business and value-added in agriculture sector side and 35% of the payroll and FTE values are deducted to ensure these contributions are allocated to farms.

4. Discussion

The results clearly show that agriculture not only continues to dominate the economy of Abbotsford; it has grown in importance.

4.1 Growth in the agriculture sector in Abbotsford

The table below summarizes the growth in farm production, agri-business, and the economic impact between 2005 and 2019.

TABLE 8. GROWTH IN AGRICULTURE FROM 2005 TO 2019

GROWTH IN AGRICULTURE 2005 TO 2019			
	Farm Production	Agri-Business & Value-added	Economic Impact of Agriculture
Expenditures 2019	\$990	\$1,409	\$3,830
2019 Expenditures in \$2005	\$709	\$1,141	\$2,910
Expenditures in \$2005	\$557	\$572	\$1,800
Growth in Nominal Terms	78%	146%	113%
Growth in Real Terms	27%	99%	62%
Compounded Annual Rate of Real Growth			3.49%
Population Growth in BC 2005 - 2019	20%		
Population Growth in Abbotsford 2005 - 2019	19%	Compounded Annual Growth	1.26%
Adjustment for inflation¹⁹			
All Items CPI from \$2019 to \$2005			0.810
Food CPI adjustment from \$2019 to \$2005			0.717

From 2005 to 2019 real growth in agri-business and value added (99%) in Abbotsford significantly outpaced the growth in agriculture production (27%). The growth in agriculture production (27%) outpaced the growth in the BC population (20%). The compounded annual growth rate for agriculture was over double the compounded annual growth rate of the population of Abbotsford.

- » The doubling of the agri-business and value-added sectors is consistent with the increase in the number of businesses providing supplies and services to the agriculture community and the increase in added value to farm products on the farm and in the industrial areas.
- » Value added in dairy products and berries made large contributions to the growth of value-added activities in Abbotsford.
- » Farm production outpacing BC population growth indicates farms are better at meeting the domestic demand or they are finding new export markets or both.

¹⁹ Agriculture Impact in \$2005 uses CPI for food on the production side and CPI on the agribusiness side after deducting the Ag specific purchases.

Real growth in farm production comes from intensification of production and a shift to production of higher value crops. For example, the acres in blueberry production rose from 3,800 in 2005 to 8,400 in 2020.²⁰ Much of the new production came from converting pasture or forage land into more intensive blueberry production. Another example is in the increase in greenhouses. The acreage in polyhouses and glass greenhouses increased by 45.7 ha between 2012 and 2020, over 80% of which was an increase in glass greenhouses growing vegetables. This is a 37% increase in greenhouse production over this time period. Intensive types of production such as berry production and greenhouse operations often include value added activities such as packaging and processing.

The 2008 report included a picture of a mushroom farm and below compares that picture with a picture of the same farm today.

2008



2022



In 2008 the farm pictured was a mushroom production operation. Between 2005 and 2022 it expanded the production capacity, added a mushroom composting facility (left side of picture) and a grading and packaging facility (center of picture) and is currently building a new mushroom barn (right side of picture).

The picture tells the story of agriculture in Abbotsford over the last 14 years. Farms are expanding production but also moving from a purely production base to value added inputs (on-farm composting) and value-added outputs (grading and packaging) often taking place on-farm. Note in the foreground the field has changed from forage to blueberries, a higher value crop.

²⁰ Abbotsford 2020, Agriculture Land Use Inventory. BC Ministry of Agriculture. agriculture land use inventory south coast

4.2 Growth in employment

The FTE jobs supported by agriculture grew 48% from 11,300 in 2005 to 16,760 in 2019.

The labour force report indicated there were 73,750 people working in Abbotsford in 2016.²¹ Agriculture supported 23% of these jobs. A closer examination of the labour force numbers shows that 22% of the workforce was employed by the public sector.²² Therefore, agriculture supported 29% of the remaining private sector jobs. This represents a higher level of dependence on the agriculture sector than was reported in 2005 where it was estimated that agriculture supported one in 5 jobs and one in 4 private sector jobs.

The payroll supporting the 4,121 direct FTE jobs in the agri-business sector indicate the average salary was \$58,000/yr. Paid wages in farm production averaged \$33,000/yr.

4.3 Adding resilience to the Abbotsford economy

The agriculture sector has demonstrated consistent growth (3.5% compounded annual rate) through the financial crisis in 2009. In addition, anecdotal evidence has shown that the sector has remained strong through the pandemic. The size of the agriculture sector in Abbotsford combined with consistent growth has provided a resiliency to the economy that benefits all businesses in Abbotsford.

21 Stats Canada Labour Force Abbotsford.
<https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CSD&Code1=5909052&Geo2=CD&Code2=5909&SearchText=abbotsford&SearchType=Begin&SearchPR=01&B1=All&TABID=1&type=0>

22 <https://www150.statcan.gc.ca/t1/tb1/en/tv.action?pid=1410009801&pickMembers%5B0%5D=1.33&cubeTimeFrame.startYear=2016&cubeTimeFrame.endYear=2020&referencePeriods=20160101%2C20200101>
(in Mission-Abbotsford 6.9% employed in education, 11.6% in health and 4.5% in government services)

Appendix A:

The multiplier effect - estimating the indirect benefits of primary agriculture production in a community

A multiplier is the value that estimates the relationship between an input and an output. The input is generally an estimated value for direct economic activity (i.e., revenue or expenditures of a sector) while the output includes direct economic activity of the initial sector plus indirect economic activity for a secondary sector or region. The multiplier effects are viewed as being a result of either demand-driven or input-output connections.

There are two demand-driven multiplier effects identified by Boleslaw & Krzysztof²³ within a given locality which are income and supply effects. Income relates to higher purchasing power of households which results from increased wages accrued by workers in the growing sector which in turn influences growth in groceries, household items and consumer products. It is technically defined as a change in income of employees of a given sector (agriculture) because of per dollar (\$1 CAD) change in demand of goods. The supply type is described as the effect of changes witnessed by other businesses such as suppliers because of changes in supply initiated by the primary sector. The changes observed with the primary sector that creates ripple effects on other sectors can give rise to growth or creation of new companies in a term known as forward linkages. The sum of the income and supply effect output is greater than the original input.

Another method used to review the multiplier effects is the input-output model. This model employs a comprehensive coverage of several industries and the linkages between them and households to determine market flow, sales, and use of factors of production.²⁴ Here, the relationship between input and output is assumed to be in tandem. For example, if production of a berry farm increases, the associated increase in each input product locally also increases. This production function is reportedly based solely on supply elasticity. This means changes in demand only result in changes in output, with no changes in real (inflation removed) prices. Such supply relationships assume that all units of a given input are equal in quality and there are no barriers to firms entering or exiting markets.

In this study, the multiplier defines the relationship between initial increase in spending in one sector (i.e. agriculture) and the increase in total economic activity that results in a different sector or region (i.e. Abbotsford) from that initial increase. An important impact of the multiplier is the effect on employment and local resources. Here, input changes in agriculture are assumed to produce a change in employment structure of the people within a local economy.²⁵ For example, if a dairy farm doubles its capacity, it will require more employees which will require new workers to enter the region or increase the earnings of current residents of the community. These increases in turn, result in a

23 Domański B. & Gwosdz K., Multiplier effects in local and regional development. *Quaestiones Geographicae* 29(2), Adam Mickiewicz University Press, Poznań 2010, pp. 27-37, 1 Fig. ISBN 978-83-232-2168-5. ISSN 0137-477X. DOI 10.2478/v10117-010-0012-7.

24 David W. Hughes. Policy uses of Economic Multiplier and Impact Analysis. The magazine of food, farm and resource issues. Choices- A publication of American Agricultural Economics Association. 2nd Quarter 2003.

25 David W. Hughes. Policy uses of Economic Multiplier and Impact Analysis. The magazine of food, farm and resource issues. Choices- A publication of American Agricultural Economics Association. 2nd Quarter 2003.

net increase in new companies and potential population growth putting positive pressure on housing and government required resources. Another effect of the input change in agriculture is the impact on government revenue. As input increases in agriculture, supply chain and related companies, ag-workers and general population will experience higher incomes and there will be a net increase in local/provincial/federal taxes and government income.

Determining multiplier values

The multiplier value can be determined using an Input-Output matrix (I-O) method. This employs input coefficients, by accessing inputs needed to generate the output of each economic activity. Input coefficients and the extent of demand met within a region allows the analysis of the impact of changes in a sector on other sectors of the economy within the same region. I-O data can be computed from a number of data sets acquired from sources such as Statistics Canada. Examples of online tools to calculate multiplier effects are RIMS II (Regional Input-Output Multiplier System), IMPLAN (Impact Analysis for Planning) and REMI (Regional Economic Model). The first two uses Leontief's inverse matrix to evaluate the I-O relationship of multiple forward and backward industry linkages. REMI is an automated simulation model that is more extensive as it combines allowance for a forecast of changes in costs, pay levels, and productivity.²⁶ It combines I-O model with the Cobb-Douglas model to determine the multiplier effect.

It is possible to determine an average multiplier value with probable ranges for different worker population sizes and according to research done by David W. Hughes.²⁷ Table 9 is a reference to determine the appropriate multiplier value for this study. The employment size class for Abbotsford is in the 50,000 and over category, which means a probable multiplier is 2.0 to 2.5. The number used in this study is 2.0, which is within this range.

TABLE 9. LOCAL ECONOMY MULTIPLIER VALUES

Regional employment size class	Average multiplier	Probable range
1,000-2,999	1.7	1.5-1.9
3,000-4,999	1.8	1.5-2.0
5,000-9,999	1.9	1.6-2.1
10,000-19,999	2.0	1.8-2.2
20,000-49,999	2.2	2.0-2.4
50,000 and over	2.2	2.0-2.5

Source: David W. Hughes. Policy uses of Economic Multiplier and Impact Analysis

26 LYNCH T., 2000. Analyzing the economic impact of transportation projects using RIMS II, IMPLAN and REMI. Florida State University, Tallahassee.

27 David W. Hughes. Policy uses of Economic Multiplier and Impact Analysis. The magazine of food, farm and resource issues. Choices- A publication of American Agricultural Economics Association. 2nd Quarter 2003.

Appendix B: Detailed calculation of direct economic activity of the agribusiness sector

AGRI BUSINESS	REVENUE (\$,000)	PAYROLL (\$,000)	FTE JOBS*
Feed Mills/Fertilizer	\$240,000	\$14,000	225
Farm Equipment	\$180,000	\$16,000	260
Machinery Repair	\$5,200	\$1,260	20
Farm Gate Services	\$38,000	\$9,000	160
Agriculture Supplies	\$92,000	\$10,000	180
Vet Services	\$15,000	\$3,200	38
Industry Association	\$45,000	\$16,000	252
Processing Berry	\$98,000	\$27,000	650
Processing Dairy	\$195,000	\$33,000	500
Processing Poultry	\$123,000	\$30,000	450
Vegetable Processing	\$35,000	\$7,700	140
Other processing	\$44,000	\$6,660	117
Poultry Hatcheries	\$94,000	\$25,000	450
Construction Farm Buildings	\$35,800	\$4,300	85
Construction Materials	\$61,000	\$11,300	186
Livestock Hauling	\$700	\$490	8
Other Farm Services	\$107,000	\$25,000	400
Total	\$1,408,700	\$239,910	4,121

Values for the agribusiness sector were developed using a combination of survey responses, expert /industry input and Statistic Canada reports. Notes to the development of the values for each sector are provided below.

Feed Mills/Fertilizer

Survey response was received in the Feed Mills /Fertilizer sector and was used in the estimate. Growth was greater than farm gate growth in Abbotsford.

Farm Equipment

Survey responses were received in this sector and were used for the estimate. The estimate is over three times 2006 estimate. This is reasonable as construction in many sectors was very active in 2019, creating demand for farm equipment. Of particular note is the poultry sector where broilers were expanding to meet new quota and egg layer farms were renovating to meet the requirements to have enhanced cage systems. Dairy was also expanding to meet increased demand.

Machinery Repair

No Survey responses. This sector was estimated to follow the growth in farm gate sales as determined by census data (1.75X 2006).

Farm Gate Services

No Survey responses. This sector was estimated to follow the growth in farm gate sales as determined by census data (1.75X 2006).

Agriculture Supplies

Survey responses were used, and the estimate is a tripling of the sector. There was also significant growth in the number of agriculture supplies companies surveyed.

Vet Services

Survey response was used to estimate the sector. Additional veterinary services were added between 2006 and 2019. Result is 2.5 X 2006. Statistics Canada has a separate expense category for veterinary services. Abbotsford's share of the 2019 estimates for BC would be \$12.7 million based on farm gate receipts. There is a 'hub' effect.

Industry Association

Industry Associations were estimated to have grown by 50%, less than the increase in farm gate receipts. Industry associations tend to be stable. Farm Credit Corp did move their office to Abbotsford after 2006.

Processing Berry

Estimate was constructed using the Ministry of Agriculture 2020 Land Use Inventory along with revenue and cost numbers from value added processors in the industry. The Ministry of Agriculture production specialist also provided input. A challenge in estimating this sector is identifying the on-farm value added sector as it is uncertain what portion of this is included in farm gate sales and what is not.

Processing Dairy

The estimate was constructed with input from industry. Dairy processing has increased in Abbotsford relative to the industry as a whole because of the addition of Vitalus Nutrition Inc. since the 2006 estimate.

Processing Poultry

Broiler processing was estimated using industry input and prevailing grower and wholesale prices. The turkey estimate used reported production values and prevailing grower prices. Eggs were estimated at a 40% increase over 2006 as the industry and location of grading and packaging had not changed significantly.

Vegetable Processing

The 2006 results for vegetable processing, with an inflation adjustment, were used for 2019. The industry has been stable over this period.

Other processing

The 2006 results for other processing, with an inflation adjustment, were used for 2019.

Poultry Hatcheries

Hatcheries were estimated according to the growth in broiler production \$275 million in 2007 to \$519 million in 2019. 2019 is estimated as 1.89 X 2006. Jobs estimated by a factor of 1.25 as jobs grow slower than revenue growth.

Construction Farm Buildings

The value of agriculture building permits in Abbotsford was used to estimate farm construction. The proportion allocated to wages and jobs was estimated from industry input. 2019 was a very busy year for farm construction as the broiler sector was expanding to meet the production of new quota and the table egg growers were modernizing to new enhanced cage systems

Construction Materials

Construction materials include companies that supply Abbotsford and beyond such as greenhouse builders, tanks, silo, etc. This was estimated by inflation adjusting the 2006 estimate.

Livestock Hauling

Livestock hauling has not changed significantly so was estimated as the 2006 value inflation adjusted to 2019.

Other Farm Services

Other farm services were estimated from survey responses. There were many more farm service businesses identified in 2019 than in 2006 so it was expected to increase significantly.

Appendix C: Survey questions

The Abbotsford Chamber of Commerce is conducting a research on the Economic Impact of Agriculture in Abbotsford. We would be pleased to have you share some information about your business. This will help us to update our 2008 report on how agriculture as an industry is driving economic growth in the City. The Survey should only take about two minutes and your responses are completely anonymous.

1. What were your total revenues in 2019? \$ _____
(estimate to the nearest \$10,000)
2. What was your total payroll in 2019? _____
(estimate to the nearest \$10,000)
3. How many full-time employees did you have in 2019? _____
4. How many part time employees did you have in 2019? _____



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