



The Economic Contributions of the Manitoba Potato Complex

informa economics



Prepared for:
Keystone Potato Producers Association Inc., Peak of the Market, Chipping Potato Growers of Manitoba, Seed Potato Growers of Manitoba, McCain Foods Canada, and Simplot Canada II



Table of Contents

I. EXECUTIVE SUMMARY	1
II. MANITOBA'S POTATO SECTOR.....	5
A. POTATO PRODUCTION	5
B. POTATO CONSUMPTION	7
III. ECONOMIC IMPACT FROM MANITOBA POTATO PRODUCTION	9
A. OVERVIEW	9
B. ECONOMIC IMPACT OF POTATOES VS. CANOLA	11
C. KEY MANITOBA INDUSTRIES IMPACTED BY MANITOBA POTATO PRODUCTION	12
D. DETAILED INDIRECT AND INDUCED IMPACTS FOR KEY INDUSTRIES IN MANITOBA	14
IV. PROCESSING AND FRESH PACKING IMPACTS.....	18
A. KEY MANITOBA INDUSTRIES IMPACTED BY POTATO PROCESSING AND FRESH PACKING.....	18
B. DETAILED INDIRECT AND INDUCED IMPACTS FOR KEY INDUSTRIES IN MANITOBA	21
V. CONCLUSIONS	24

List of Exhibits

Exhibit 1: Manitoba Potato Production	1
Exhibit 2: Economic Impact of the 2013 Manitoba Potato Crop (2013)	3
Exhibit 3: 2013 Manitoba Potato Economic Multipliers	4
Exhibit 4: Manitoba Potato Production and Production Share	5
Exhibit 5: Manitoba Potato Yield and Production (2002 – 2013)	6
Exhibit 6: End Use of Canadian Potatoes	8
Exhibit 7: Impact of the 2013 Manitoba Potato Crop (Regional and National).....	10
Exhibit 8: Boost to Manitoba’s Economy from Producing Potatoes over Canola in 2013.....	11
Exhibit 9: Economic Impact of Manitoba Potato Production to Manitoba	13
Exhibit 10: Manitoba’s 2013 Potato Crop Indirect and Induced Impact on Output (Detail)	15
Exhibit 11: Manitoba’s 2013 Potato Crop Indirect and Induced Impact on Gross Regional Product (Detail).....	16
Exhibit 12: Manitoba’s 2013 Potato Crop Indirect and Induced Impact on Employment (Detail).....	17
Exhibit 13: Uses of Manitoba Potatoes.....	18
Exhibit 14: Economic Impact of Manitoba Processing and Fresh Pack Operations (Net of Potato Farming)	19
Exhibit 15: Manitoba’s 2013 Potato Processor and Fresh Packing Indirect and Induced Impact on Output (Detail).....	21
Exhibit 16: Manitoba’s 2013 Potato Processor and Fresh Packing Indirect and Induced Impact on Gross Regional Product (Detail)	22
Exhibit 17: Manitoba’s 2013 Potato Processor and Fresh Packing Indirect and Induced Impact on Employment (Detail).....	23
Exhibit 18: 2013 Manitoba Potato Economic Multipliers.....	24
Exhibit 19: Economic Contribution of Manitoba Potato Complex (2013)	25

Disclaimer

This report was produced for Keystone Potato Producers Association (“Client”), with additional funding from Peak of the Market, Chipping Potato Growers of Manitoba, the Seed Potato Growers of Manitoba, McCain Foods Canada, and Simplot Canada II. Informa Economics, Inc. (“Informa”) has used the best and most accurate information available to complete this study. Informa is not in the business of soliciting or recommending specific investments. The reader of this report should consider the market risks inherent in any financial investment opportunity. Furthermore, while Informa has extended its best professional efforts in completing this analysis, the liability of Informa to the extent permitted by law, is limited to the professional fees received in connection with this project.

Acronyms

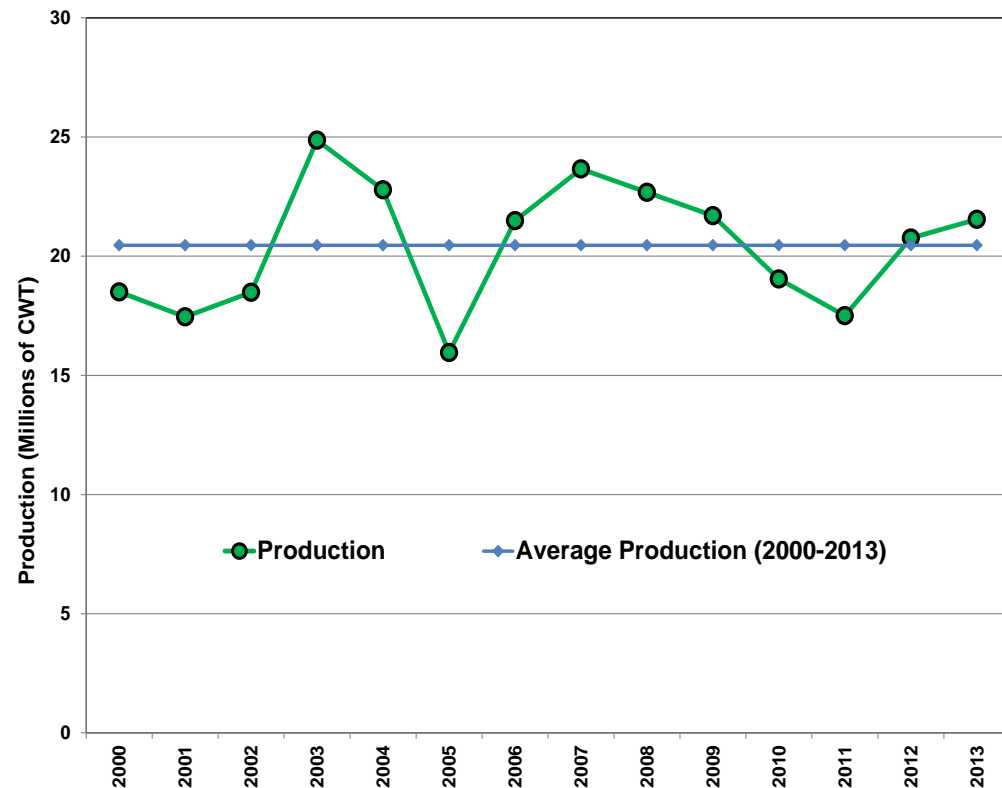
TMT: Thousand Metric Tonnes
MT: Metric Tonnes
FTE: Full Time Equivalent Jobs
\$: All values in the report are in Canadian Dollars
GRP: Gross Regional Product
CWT: Hundred Weight or 100 pounds by weight

I. EXECUTIVE SUMMARY

Potato production in Manitoba has averaged 20.5 million cwt (hundredweight) from 2000 to 2013. Potato production in 2013 was slightly above average at 21.5 million cwt (Exhibit 1). This production makes Manitoba the second largest potato producing province and the largest of the western provinces. The large size of the Manitoba potato industry prompts the need to understand the impact potato production and potato processing has on the Manitoba economy, as well as the risk of lost economic activity if the Manitoba potato production or processing were to trend lower.

According to Statistics Canada, 2011 saw lower potato production and was at levels not recorded since 2005. The lower potato production has a real impact on the economy and jobs within Manitoba. Manitoba is home to large processors, such as McCains Foods Canada, Simplot Canada II, and also to the smaller Naleway Foods Ltd., and Old Dutch, as well as pack houses that handle potatoes for the fresh market. Potatoes are harvested near the end of the year, which means that the impact of a low harvest is realized in terms of processing shortfalls in the following year. In 2012, employees lost hours due to a shortage in potatoes to process. To the extent potatoes were exported to other plants in the U.S. Manitoba also missed out on the other value added benefits from potato processing.¹ This report estimates the economic contribution of Manitoba's potato complex, which includes production and value-added industries, such as processed potato manufacturing at the provincial level and for the national economy.

Exhibit 1: Manitoba Potato Production



Source: Statistics Canada

¹ McNeill. "Simplot Canada II in Portage to cut hours as potato shortage looms," Winnipeg Free Press 2/28/2014.

Potato production is a high input enterprise. Each acre of production provides higher economic impacts than other field crops typical in the region, because of the increased costs (“upstream”) and income potential per acre. Depending on variety, marketing period (storage), and yield, operating costs² can exceed \$2,000 per acre. For perspective, the costs per acre are 4-5 times higher than corn and up to 10 times higher than other grains.³ When the potatoes are further processed in Manitoba it provides shorter transportation routes, which generally means local trucks are used. The processing plants provide jobs and due to the nature of food processing these plants support an array of service industries that keep them running. High revenue per acre, localized markets, and further processing for potato production means that potato growers add more value in comparison to other producers per acre. This provides additional value to the Manitoba and the overall Canadian economy.

Potato production in Manitoba has provided economic benefits to both the province and the country as a whole. These benefits are in the form of the economic activity at the farm level as well as to the industries that support farming activities. Examples of these sectors include fertilizer, seed, and transportation costs. The economic support provided to Manitoba and the nation is summarized in Exhibit 2. Output is the sales generated by businesses within the selected area. Gross Regional Product (GRP) is the value added to the economy and that contributes to the Gross Domestic Product (GDP). Employment is measured in full time equivalent (FTE) jobs.

Potato processing and fresh packing operations are an important link in the supply chain for the overall potato complex in Manitoba. Although, further processing or packing of potatoes has an impact on potato farming, they also impact the service industries that support their operations. The net additional contribution of potato processing and packing, beyond the potato farming sector, was estimated for the Manitoba and Canadian economy. This contribution is separated between the direct contribution at the plant or pack shed and the non-potato related upstream contributions in Exhibit 2.

In total, the Manitoba potato complex is responsible for over \$1.4 billion in industry output with \$1.0 billion in Manitoba. This industry activity added \$403 million to the Canadian GDP with \$287 million staying in Manitoba. The equivalent of 4,594 full time jobs were provided by the overall potato complex, with 3,143 of those jobs being serviced in Manitoba and the other jobs contributed to other provinces.

² Only operating costs are referenced here. Fixed and ownership costs vary by farm but will further drive up total costs per acre.

³ Cost of production data taken from “Guidelines for Estimating Crop Production Costs-2013 for Western Manitoba,” by Manitoba Agriculture Food and Rural Initiative Office. Potato costs of production use data from the University of Idaho’s College of Agriculture Economic and Rural Sociology.

Exhibit 2: Economic Impact of the 2013 Manitoba Potato Crop (2013)

Economic Contribution	Manitoba Potato Grower's Contribution to Manitoba Only	Manitoba Potato Grower's Contribution to All of Canada
<i>(values in millions except job numbers)</i>		
Upstream Contribution (from Potato Farming)		
Gross Regional Product	\$59	\$120
Jobs	634	1,156
Output	\$104	\$230
Farming		
Gross Regional Product	\$121	\$121
Jobs	599	599
Output	\$245	\$245
Upstream Contribution (from Potato Processing and Fresh Packing)		
Gross Regional Product	\$45	\$100
Jobs	926	1,855
Output	\$197	\$500
Potato Processing		
Gross Regional Product	\$51	\$51
Jobs	858	858
Output	\$418	\$418
Fresh Packing/Table Stock		
Gross Regional Product	\$11	\$11
Jobs	126	126
Output	\$45	\$45
Total Contribution		
Gross Regional Product	\$287	\$403
Jobs	3,143	4,594
Output	\$1,009	\$1,438

Source: Informa

The multipliers can be interpreted as the total output, gross regional product, and employment that exist across the potato complex as a result of potato sales by the farmer. These multipliers are based on the current mix of processing and packing in Manitoba and the contributions that were provided to the Manitoba and greater Canadian economies in 2013. As such, these multipliers are subject to change across production years, but they do serve as a benchmark for analogous years of production to better understand the impact of the potato complex. Both a Manitoba and Canadian multiplier are given and provide similar meanings, with the Canadian multiplier accounting for a more inclusive geographic area. The multipliers for Manitoba or all of Canada can be interpreted by the following:

- Output Multiplier: The total output across the potato complex and supporting industries that occurred for every \$1 of potato sales in Manitoba in 2013.
- Gross Regional Product Multiplier The total gross regional product that was supported by the potato complex and its supporting industries that occurred for every \$1 of potato sales in Manitoba in 2013.
- Employment Multiplier The total full time equivalent jobs that was supported by the potato complex per every \$1 million of potato sales in Manitoba in 2013.

Exhibit 3: 2013 Manitoba Potato Economic Multipliers

Economic Impact Type	Manitoba	Canada
Output	4.12	5.87
Gross Regional Product	1.17	1.64
Employment	12.83	18.75

Source: Informa

II. MANITOBA'S POTATO SECTOR

A. Potato Production

Potato production in Manitoba has averaged 20.1 million cwt (hundredweight) from 2009 to 2013. Potato production in 2013 was slightly above average at 21.5 million cwt. This production makes Manitoba the second largest potato producing province and the largest of the western provinces. Furthermore, Manitoba grows about 20% of all potato in Canada (see Exhibit 4). The large size of the Manitoba potato industry prompts the need to understand the impact potato production has on the Manitoba economy, as well as the risk of lost economic activity if the Manitoba potato production trends lower.

Exhibit 4: Manitoba Potato Production and Production Share

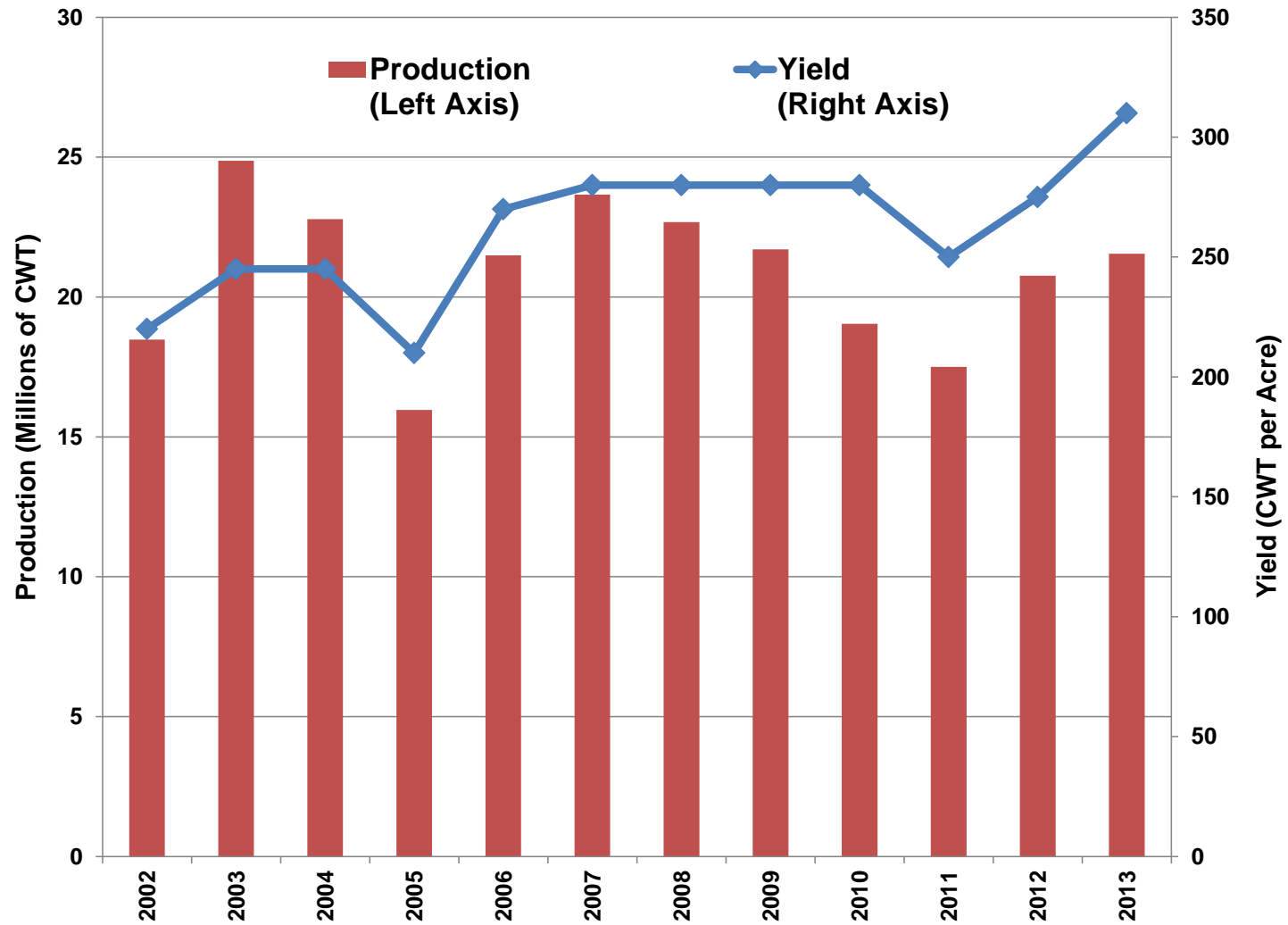
Year	Harvested Area (Acres)	Production (Million CWT)	Share of Canadian Harvested Area	Canadian Production
2009	77,500	21.7	22%	22%
2010	68,000	19.0	20%	20%
2011	70,000	17.5	20%	19%
2012	75,500	20.8	21%	21%
2013	69,500	21.5	20%	21%
Five Year Average	72,100	20.1	20%	20%

Source: Statistics Canada

Manitoba grows potatoes for processing as well as for the fresh market. Simplot Canada II has a processing plant for potatoes in Portage la Prairie and McCain Foods Canada has two plants with one in Portage and the other in Carberry. Naleway Foods Ltd. and Old Dutch are smaller in size, but are also located in Manitoba. Potatoes in Manitoba are also grown for the fresh or table market, for chipping, and for seed. Overall, processing was estimated to account for approximately 79% of potato production in 2013.

Potato yields have also been steadily increasing over the last decade (see Exhibit 5). Although harvested acres were lower in 2013, the increase in production per acre is keeping production fairly level in the province.

Exhibit 5: Manitoba Potato Yield and Production (2002 – 2013)



Source: Statistics Canada

B. Potato Consumption

Manitoba grows the majority of its potatoes for processing (79%). The frozen French fry industry began increasing in size in Canada in the late 1990's. The plants were primarily export focused, but also served domestic demand. Plants were attracted to Manitoba due to its vicinity to Eastern Canada's population and access to both potato growing regions and export demand in the U.S. The difference in the value of the Canadian dollar and the U.S. dollar at that time also played a role in Canada's potato processing development.

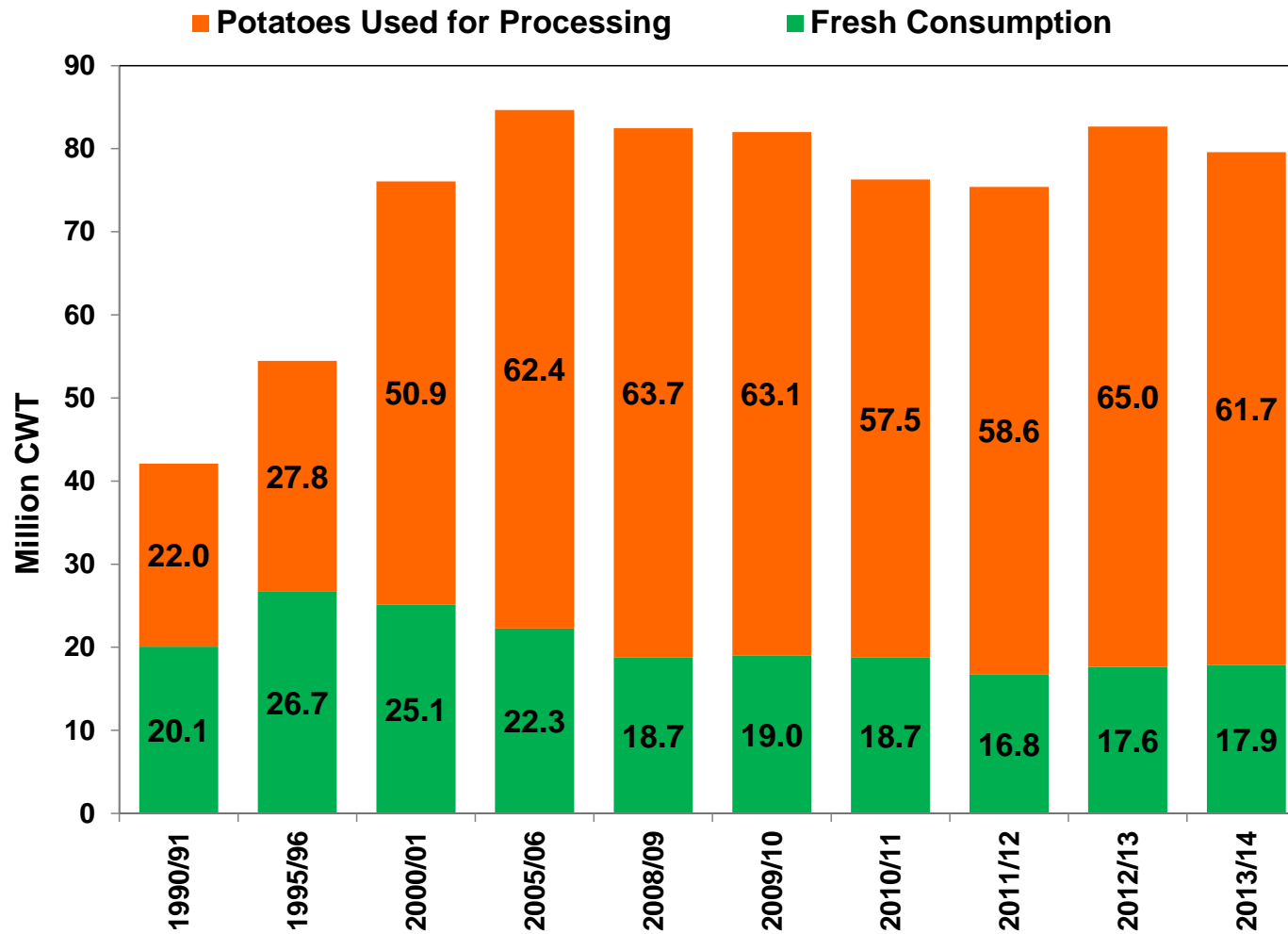
Manitoba has several large processing plants, which include Simplot Canada II, who has processing plant for potatoes in Portage la Prairie and McCain Foods Canada has two plants with one in Portage and the other in Carberry. Naleway Foods Ltd. and Old Dutch are smaller in size, but are also potato processors located in Manitoba. Potatoes in Manitoba are also grown for the fresh or table market (11%) in which the majority of fresh potatoes are marketed through a grower owned marketing group called Peak of the Market. A much smaller share of the total potato crop in Manitoba goes for chipping into potato chips. Old Dutch Foods is a chipper in Manitoba, with a facility in Winnipeg. Manitoba is also a producer of seed potatoes (8%), which assist in servicing provincial needs. The primary market for all potatoes and potato products in Manitoba is the United States and the domestic market.

The USDA-FAS provides a Potato Annual each year, which indicated in 2013 that fresh potato consumption is up 1.3% in Canada for the 2013/2014 crop. This increase begins to stabilize the consumption trend for potatoes in Canada. According to Statistics Canada's domestic potato consumption is approximately 23-25 kg per capita per year, of which approximately 7 kg are French fries⁴. However, in terms of total use 77% of Canada's potato crop⁵ is sent to the processing industry, which is used for in-country needs and for exports. The chart in Exhibit 6 shows the estimated use of Canadian potatoes.

⁴ Although only 7 kg per capita of French fries are consumed in Canada, Canada produces 4-5 times as many French fries as are needed and exports the surplus product. This is why more Canadian potatoes are sent to processing than are sent to the fresh market as shown in Exhibit 6.

⁵ Five year average from 09/10 to 13/14.

Exhibit 6: End Use of Canadian Potatoes



Source: Post estimates based on Statistics Canada (USDA-FAS), Post forecast (13/14)

III. ECONOMIC IMPACT FROM MANITOBA POTATO PRODUCTION

A. Overview

Economic impact analysis utilizes spending patterns within a supply chain to determine how increased revenues in a specific industry will impact the local, regional, or national economy. This report primarily focuses on the economic activity that is supported in Manitoba from Manitoba potato production. However, Manitoba potato production supports more than just the sectors within its borders. Supporting sectors from other provinces are indirectly impacted thus there is an impact on the broader Canadian economy. In addition to the economic activity supported by potato production, the report also provides the net impact on a per acre basis of producing potatoes as opposed to other alternatives. Potatoes have some of the highest unit costs and offer greater economic impacts on a per acre basis. By planting potatoes over cereal or oilseed crops in 2013, Manitoba's economy was boosted by additional output, Gross Regional Product, and jobs.

Economic impacts are categorized based on their relation to the subject industry, such as potato farming. These categories are as follow:

- Direct economic impacts are defined as those directly associated with potato production. This includes the impact from potato farming's spending pattern.
- Indirect economic impacts are the additional economic impacts that affect other industries and can be linked to the industry that was directly impacted. This would represent how a local pesticide company spends the revenue it receives from farmers.
- Induced economic impacts are the economic activity associated with the spending of labor income generated by direct and indirect economic activities. This represents the economic activity from farm workers and workers of the pesticide company spending their income that was derived from potato production.

The economic activity is also presented by the impact type:

- Output (Industry Sales)
- Employment (Jobs)
- Gross Regional Product (Value Added)

Exhibit 7 shows the economic impact the 2013 potato crop in Manitoba was estimated to provide to Manitoba and all of Canada.

Exhibit 7: Impact of the 2013 Manitoba Potato Crop (Regional and National)

	Contribution to Manitoba's Economy from Manitoba Potato Production (In Millions Except Employment)	Contribution to Other Canadian Provinces from Manitoba Potato Production (In Millions Except Employment)	Total Support to Canada from Manitoba Potato Production (In Millions Except Employment)
Output			
Direct	\$245	\$0	\$245
Indirect	\$76	\$92	\$167
Induced	\$29	\$34	\$63
Total	\$349	\$126	\$476
Gross Regional Product			
Direct	\$121	\$0	\$121
Indirect	\$41	\$42	\$83
Induced	\$19	\$19	\$37
Total	\$180	\$61	\$241
Employment (FTE Jobs)			
Direct	599	0	599
Indirect	456	347	803
Induced	178	175	353
Total	1,233	522	1,755

Note: Of the 1,233 FTE jobs, 599 FTE are directly employed by the potato industry. Labor per acre is higher for potato farming than grain crops, which means that FTE jobs would be eliminated if other crops were grown.

Source: Informa

The table in Exhibit 7 shows that the 2013 Manitoba potato crop supported \$349 million in sales in Manitoba and a total of \$476 million in sales for all of Canada. These sales include the potato revenue (\$245 million) as well as the sales generated by the businesses that supply the potato farming sector and the labor income it creates. The value to the economy is measured by Gross Regional Product and the table shows that \$241 million was added to Canada's economy with \$180 million being added to Manitoba. Jobs supported by Manitoba potatoes were 1,233 in the province and 1,755 nationwide (including Manitoba). Positive farmer margins from the 2013 crop influences induced economic impacts and the additional earning potential by potato farmers has the potential to provide higher economic returns.

B. Economic Impact of Potatoes vs. Canola

Due to the high cost per acre and potentially high revenue per acre of the potato industry, the economic multipliers tend to be much larger than other crops, such as canola. This is not to say that every canola acre can be replaced by potatoes because unlike canola, the potato industry is somewhat limited based on the quality of the land that is needed. Consumption of potatoes is also more limited than cereal and oilseed crops, which limits the acres that are planted. However, when potatoes can be successfully grown and marketed, they provide additional benefits per acre than most other crops. The boost to the Manitoba economy from growing potatoes as opposed to another crop was explored by comparing the economic multipliers for potatoes to the economic multipliers for canola⁶. This analysis resulted in a net benefit to Manitoba from the production of potatoes. Canola was used for the comparison because it was among the next highest operating costs of the major crop choices in Manitoba.

Although the higher cost and revenue per acre associated with potato production increases the economic activity per acre, the impact is further increased from higher economic impact multipliers. The additional contribution of Manitoba potatoes shown in Exhibit 8 should be interpreted as the incremental increase in sales, Gross Regional Product, and jobs that were created within Manitoba by harvesting 69,500 acres of potatoes instead of 69,500 acres of canola.

Exhibit 8: Boost to Manitoba's Economy from Producing Potatoes over Canola in 2013

Impact Type	Additional Contribution*
	<i>(In Millions Except Employment)</i>
Output	\$312
Gross Regional Product	\$151
Employment (FTE Jobs)	1,035

*Increases are the result of higher multipliers and higher direct revenue and labor per acre

Source: Informa

⁶ The economic multipliers for canola are based on input-output models for Canola from Statistics Canada and that were analyzed by Informa in its development of the 2013 Economic Impact of Manitoba Corn report.

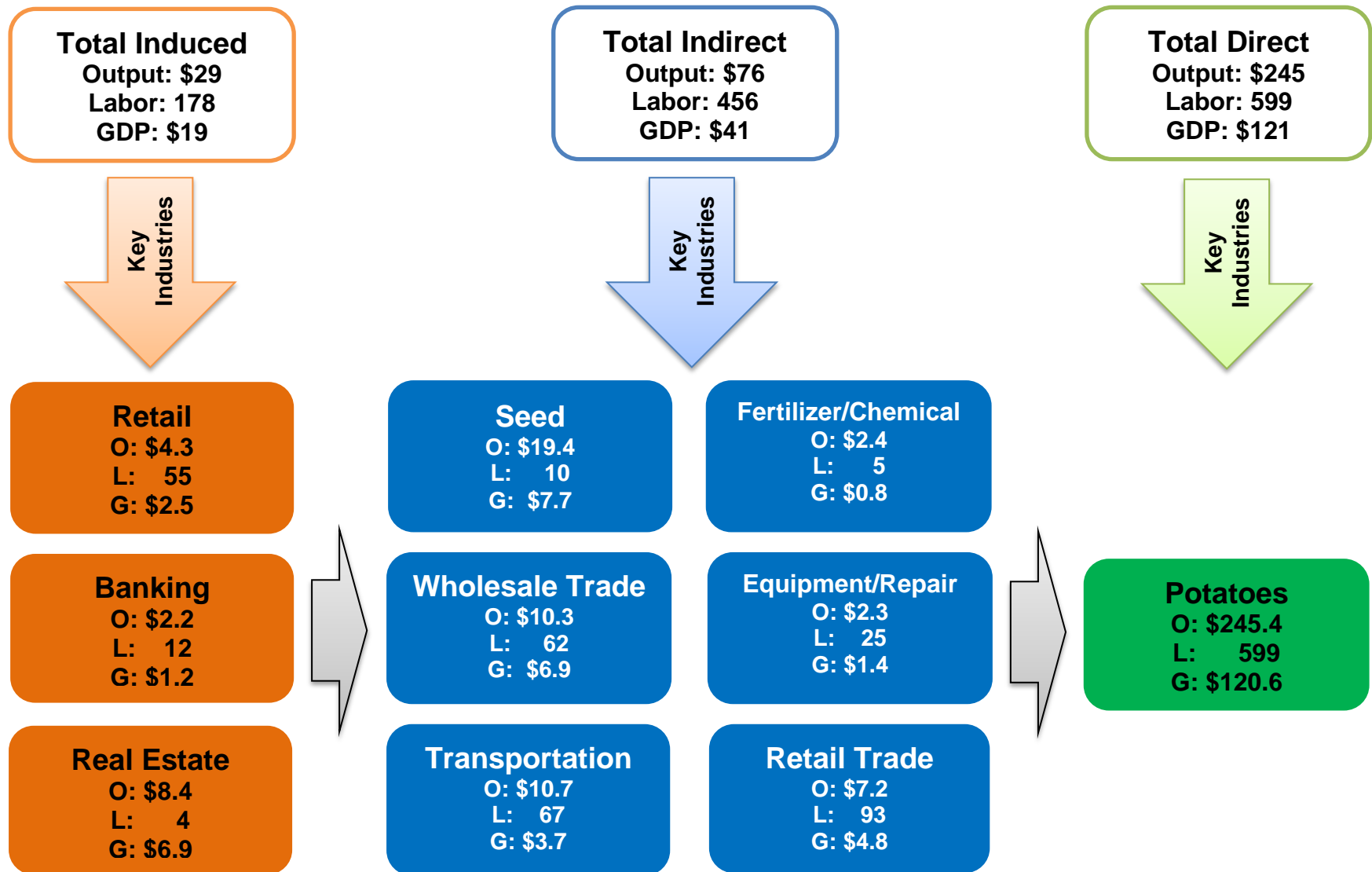
C. Key Manitoba Industries Impacted by Manitoba Potato Production

A summary of the key industries that benefit from Manitoba's 2013 potato crop are reported in this section. This section presents the benefits that accrue due to indirect and induced relationships between potato production and select industries. Specific supporting industries have been highlighted and include the following:

- Seed Purchase of potato seed
- Fertilizer & Chemicals Includes fertilizer, insecticide, herbicide, etc.
- Wholesale Trade This sector includes a variety of industries, but can be thought of, for indirect effects, as other farm supplies that are not covered by a specific category.
- Transportation This includes shipment of inputs to the farm, farm product to the buyer, and the indirect freight activity within the supply chain.
- Banking Unlike some inputs, farms are usually serviced by nearby banks
- Retail Trade The induced impact of spending labor income and farm income generally have an impact on retail trade.
- Real Estate and Housing A large portion of labor income and, to some extent, farm income is directed toward real estate or housing. This category includes rental property in terms of farmland and also for housing.

Exhibit 9 presents the economic impact of Manitoba potatoes throughout the Manitoba potato supply chain. The following page contains notes that assist in explaining the diagram.

Exhibit 9: Economic Impact of Manitoba Potato Production to Manitoba



(See notes on the next page)

Notes Related to Exhibit 9:

Region: The diagram in Exhibit 9 only presents the contribution from Manitoba potato production as they affect Manitoba's economy. When looking at the contribution from a national level, the impacts are larger because there are suppliers to Manitoba that are located in other provinces.

O: Output, which is a measure of the total sales in the economy

L: Labor or employment is a measure of the jobs added and, in the report, jobs are presented in full time equivalents (FTE) or 1 worker working for 40 hours each week.

G: Gross regional production is a value added measure considered to be the contribution to the national Gross Domestic Product.

Model: The results presented in the table were calculated using Informa's estimate of market size. The model is based on the Canadian Input-Output tables constructed by Statistics Canada. Potato multipliers were developed from customized spending patterns, as they are not currently available in the statistics Canada model. The customized spending pattern was based on the most recent enterprise budget from General Manitoba Agriculture, Food and Rural Development (MAFRD).

Key

Industries: The total impacts are listed at the top of the diagram. In order to provide a brief view of the key supporting industries, select industries were listed in the flow chart. A more detailed list of the industries impacted is presented later in the report.

D. Detailed Indirect and Induced Impacts for Key Industries in Manitoba

Exhibit 10, Exhibit 11, and Exhibit 12 present impacts using the same industries as shown in Exhibit 9, but provide greater detail. The tables also present the impacts on a national scale, as Manitoba potato farming supports industries in other provinces. Exhibit 10 presents the indirect and induced impact for key industries at the provincial level and for all of Canada. Inputs to potato production are the indirect benefactors from potato production, whereas retail trade, wholesale trade and real estate sectors benefit the most from the spending of income (induced impact). The induced impact from labor income and farm income provided \$8.4 million of support to the real estate sector in Manitoba and, when combined

with the impact felt in other provinces, supported all of Canada by \$12.69 million. Fertilizer and Chemicals are a major cost category for potato production, but our research indicates that much of the chemicals originate from outside of Manitoba. This explains why the indirect contribution in Manitoba for fertilizer and chemicals is fairly small, but represents a fairly large portion of the indirect impact to the nation.

Exhibit 10: Manitoba's 2013 Potato Crop Indirect and Induced Impact on Output (Detail)

<i>(in millions)</i>	Manitoba Output		Canada Output	
Industry	Indirect	Induced	Indirect	Induced
Seed	\$19.40	\$0.12	\$27.27	\$0.50
Fertilizer/Chemical	\$2.44	\$0.02	\$20.58	\$0.23
Equipmnet/Repair	\$2.32	\$0.96	\$4.58	\$2.14
Wholesale Trade	\$10.27	\$1.04	\$16.05	\$3.27
Retail Trade	\$7.18	\$4.32	\$8.91	\$7.44
Transportation	\$10.70	\$0.42	\$16.19	\$1.39
Banking	\$1.29	\$2.19	\$3.85	\$5.07
Real Estate	\$0.97	\$8.40	\$2.20	\$12.69
All Other	\$20.94	\$11.04	\$67.59	\$30.30
Subtotal	\$75.53	\$28.52	\$167.22	\$63.00
Total	\$104.05		\$230.23	

Source: Informa & Statistics Canada

Exhibit 11 presents the detailed indirect and induced impacts in terms of Gross Regional Product for Manitoba and all of Canada. The results in the table can be interpreted as the income and tax revenue generated in each industry as a result of the economic activity created by the Manitoba potato crop. The Gross Regional Product is commonly used as a measure of the economy and is closely related to Manitoba's contribution to the Canadian GDP. The table suggests that the potato farming sector in Canada created indirect and induced effects that increased the provincial economy by \$59 million. When considering the impact to other provinces, the indirect and induced impact to the nation was \$120 million.

Exhibit 11: Manitoba's 2013 Potato Crop Indirect and Induced Impact on Gross Regional Product (Detail)

<i>(in millions)</i>	Manitoba GRP		Canada GRP	
	Indirect	Induced	Indirect	Induced
Seed	\$7.75	\$0.05	\$11.29	\$0.22
Fertilizer/Chemical	\$0.85	\$0.01	\$7.38	\$0.08
Equipmnet/Repair	\$1.35	\$0.59	\$2.41	\$1.17
Wholesale Trade	\$6.88	\$0.70	\$10.31	\$2.01
Retail Trade	\$4.83	\$2.53	\$5.91	\$4.31
Transportation	\$3.70	\$0.15	\$6.13	\$0.55
Banking	\$0.73	\$1.20	\$2.23	\$2.92
Real Estate	\$0.61	\$6.90	\$1.37	\$10.22
All Other	\$13.96	\$6.46	\$36.02	\$15.78
Subtotal	\$40.66	\$18.58	\$83.05	\$37.26
Total	\$59.24		\$120.31	

Source: Informa & Statistics Canada

Employment is presented in Exhibit 12 in the form of full time equivalent (FTE) jobs. Each full time equivalent job is defined as one person working for one year using a standard work week. Although farming is a relatively capital intense enterprise, the indirect activity that supports agriculture is relatively more reliant on labor. The direct impact on jobs presented in Exhibit 9 was 599 jobs, but the total employment supported through indirect and induced impacts in Canada was 1,156. This provides total jobs to Canada of 1,755.

Exhibit 12: Manitoba's 2013 Potato Crop Indirect and Induced Impact on Employment (Detail)

<i>Full Time Equivalents</i>	Manitoba Jobs		Canada Jobs	
Industry	Indirect	Induced	Indirect	Induced
Seed	10	0	15	2
Fertilizer/Chemical	5	0	22	0
Equipmnet/Repair	25	10	39	17
Wholesale Trade	62	8	92	20
Retail Trade	93	55	115	92
Transportation	67	2	97	7
Banking	7	12	17	24
Real Estate	3	4	6	7
All Other	186	87	400	183
Subtotal	456	178	803	353
Total	634		1,156	

Source: Informa & Statistics Canada

IV. PROCESSING AND FRESH PACKING IMPACTS

Potato processing and the fresh pack industry also provide a critical link in the overall potato complex in Manitoba. These industries serve as a market for potato producers and likely would not be located in Manitoba if not for the potato farming in the area. Key users of Manitoba potatoes have direct sales of \$500 million and account for nearly 1 million metric tonnes of potato production (Exhibit 13).

Exhibit 13: Uses of Manitoba Potatoes

Description	Manitoba Potato Usage (Thousand Metric Tonnes)	Size of the Industry in Manitoba (millions)
Processing	792	\$418
Chipping	20	\$13
Fries and Other Processing	772	\$405
Fresh/Table Stock	104	\$45
Seed*	78	\$37
Total	977	\$500
Total (less seed)	899	463

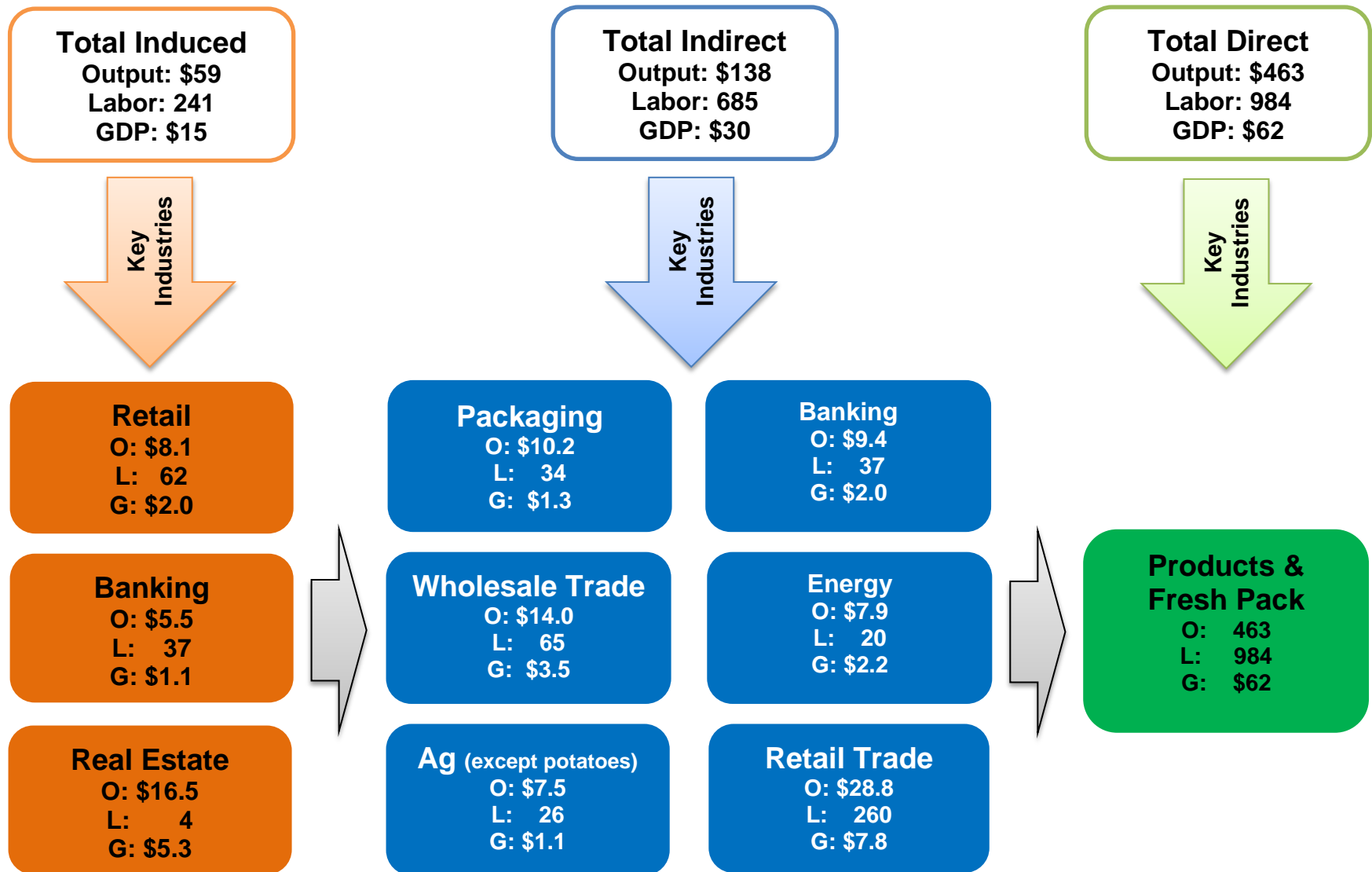
Source: Informa, Statistics Canada, Global Trade Atlas (GTIS)

Seed is another market for Manitoba potatoes, but is unique because it is a product created for the potato industry from the potato industry. Seed is listed as an end use for potato production, but its economic contribution has been combined with potato farming in the previous section.

A. Key Manitoba Industries Impacted by Potato Processing and Fresh Packing

The economic impacts of processors and fresh packing operations were analyzed and estimated for their contributions to the economy. These impacts were calculated net of the contribution that they have on the potato sector, as that sector has already been described in this report. Rather the economic impact that these industries have on all other services that support their business activities has been estimated. This net impact approach ensures that there is no “double-counting” when totaling the economic contributions across the entire potato complex. These contributions were estimated and are summarized in Exhibit 14.

Exhibit 14: Economic Impact of Manitoba Processing and Fresh Pack Operations (Net of Potato Farming)



(See notes on the next page)

Notes Related to Exhibit 14:

Region: The diagram in Exhibit 14 only presents the contribution from Manitoba potato processing and fresh pack industry as they affect Manitoba's economy. When looking at the contribution from a national level, the impacts are larger because there are suppliers to Manitoba that are located in other provinces.

O: Output, which is a measure of the total sales in the economy

L: Labor or employment is a measure of the jobs added and, in the report, jobs are presented in full time equivalents (FTE) or 1 worker working for 40 hours each week.

G: Gross regional production is a value added measure considered to be the contribution to the national Gross Domestic Product.

Model: The results presented in the table were calculated using Informa's estimate of market size. The model is based on the Canadian Input-Output tables constructed by Statistics Canada. Potato multipliers were developed from customized spending patterns, as they are not currently available in the statistics Canada model. The customized spending pattern was based on the production estimates and prices derived from trade using the Global Trade Atlas (GTIS).

Key

Industries: The total impacts are listed at the top of the diagram. In order to provide a brief view of the key supporting industries, select industries were listed in the flow chart. A more detailed list of the industries impacted is presented later in the report.

*Net of
Potato*

Farming: The analysis excludes the impact that processing and packing operations has on potato farming. This impact is included in the economic impact of potato farming numbers from the previous section. By calculating the economic impact of processing, net of potato farming, the results can be tallied with the farming impact to provide a total contribution from the entire potato complex without double counting.

B. Detailed Indirect and Induced Impacts for Key Industries in Manitoba

Exhibit 15, Exhibit 16, and Exhibit 17 present impacts using the same industries as shown in Exhibit 14, but provide greater detail. The tables also present the impacts on a national scale, as Manitoba's processors and fresh pack operations are supported by industries that are outside of Manitoba.

Exhibit 15 presents the indirect and induced impact on output for key industries at the provincial level and for all of Canada. Indirect output is the sales of the other businesses that benefit from servicing potato processing and packing. Induced output is the sales of other business that are created from the spending income generated by either potato processing and packing or from the businesses that they indirectly support. When combined, the indirect and induced impacts provide the additional contributions that the processors and packers offer Manitoba and all of Canada beyond their own revenue stream. The table suggests that in addition to the direct sales by Manitoba potato processors and packers, an additional \$500 million in sales is created in Canada, with \$197 million of the additional sales residing in Manitoba.

Exhibit 15: Manitoba's 2013 Potato Processor and Fresh Packing Indirect and Induced Impact on Output (Detail)

<i>(in millions)</i>	Manitoba		Canada	
Industry	Indirect	Induced	Indirect	Induced
Real Estate	\$4,276	\$16,495	\$6,535	\$26,558
Transportation	\$13,393	\$1,191	\$39,624	\$4,355
Banking	\$9,425	\$5,353	\$19,984	\$13,706
Power Generation and Distribution	\$7,886	\$2,232	\$11,863	\$4,188
Retail Trade	\$28,859	\$8,085	\$36,434	\$14,653
Wholesale Trade	\$13,999	\$2,000	\$28,270	\$6,911
Packaging	\$10,180	\$51	\$19,307	\$370
Agricultural Production (Except Potatoes)	\$7,468	\$765	\$36,060	\$3,051
All Other Industries	\$43,015	\$22,524	\$161,292	\$66,852
Subtotal	\$138,499	\$58,696	\$359,370	\$140,644
Total	\$197,195		\$500,013	

Source: Informa & Statistics Canada

The additional contribution that potato processing and packing provides to the regional and national economy is shown in Exhibit 16. The table suggests that nearly \$100 million is added to the Canadian Gross Domestic Product from the indirect and induced impacts of potato processors and packers. The \$100 million represents additional labor income, tax revenue, and profit that were added to the economy, with nearly \$45 million of the impact being kept in Manitoba.

Exhibit 16: Manitoba’s 2013 Potato Processor and Fresh Packing Indirect and Induced Impact on Gross Regional Product (Detail)

<i>(in millions)</i>	Manitoba		Canada	
Industry	Indirect	Induced	Indirect	Induced
Real Estate	\$1,094	\$5,280	\$1,633	\$8,353
Transportation	\$1,994	\$216	\$6,444	\$790
Banking	\$1,995	\$1,141	\$4,383	\$3,051
Power Generation and Distribution	\$2,219	\$647	\$3,286	\$1,179
Retail Trade	\$7,823	\$2,004	\$9,791	\$3,621
Wholesale Trade	\$3,465	\$517	\$6,678	\$1,632
Packaging	\$1,318	\$7	\$2,617	\$51
Agricultural Production (Except Potatoes)	\$1,095	\$94	\$5,622	\$352
All Other Industries	\$9,148	\$4,802	\$27,432	\$12,975
Subtotal	\$30,150	\$14,707	\$67,887	\$32,005
Total	\$44,858		\$99,892	

Source: Informa & Statistics Canada

The businesses that support Manitoba’s potato processor and packing industry and the businesses that benefit from the spending of the associated labor income employ 1,855 Canadians, with 926 of these full time equivalent jobs showing up in Manitoba. These jobs are in addition to the employees employed directly by the potato farming, processing, or packing industries.

Exhibit 17: Manitoba's 2013 Potato Processor and Fresh Packing Indirect and Induced Impact on Employment (Detail)

Full Time Equivalents Industry	Manitoba		Canada	
	Indirect	Induced	Indirect	Induced
Real Estate	4	4	6	7
Transportation	57	6	146	19
Banking	37	21	68	45
Power Generation and Distribution	20	6	26	9
Retail Trade	260	62	324	112
Wholesale Trade	65	10	119	28
Packaging	34	0	55	1
Agricultural Production (Except Potatoes)	26	3	110	12
All Other Industries	182	129	481	288
Subtotal	685	241	1,335	520
Total	926		1,855	

Source: Informa & Statistics Canada

V. CONCLUSIONS

The Manitoba potato complex includes many businesses that support the production and distribution of potatoes and potato products. Economic multipliers serve as a benchmark for similar years of production to better understand the impact of the potato complex. These multipliers are based on the current mix of processing and packing to potato production in Manitoba and the contributions that were provided to the Manitoba and greater Canadian economies in 2013. As such, these multipliers are subject to change across production years. Both a Manitoba and Canadian multiplier are given and provide similar meanings, with the Canadian multiplier accounting for a more inclusive geographic area. The multipliers for Manitoba or all of Canada can be interpreted by the following:

- Output Multiplier: The total output across the potato complex and supporting industries that occurred for every \$1 of potato sales in Manitoba in 2013.
- Gross Regional Product Multiplier: The total gross regional product that was supported by the potato complex and its supporting industries that occurred for every \$1 of potato sales in Manitoba in 2013.
- Employment Multiplier: The total full time equivalent jobs that was supported by the potato complex per every \$1 million of potato sales in Manitoba in 2013.

Exhibit 18: 2013 Manitoba Potato Economic Multipliers

Economic Impact Type	Manitoba	Canada
Output	4.12	5.87
Gross Regional Product	1.17	1.64
Employment	12.83	18.75

Source: Informa

The economic contributions of potato processing and packing were estimated separate of potato farming so that the results could be combined to provide an overall view of the contribution of the Manitoba potato complex. In total, the Manitoba's potato complex is generated over \$1.4 billion in Canadian output with \$1.0 billion staying in Manitoba. This industry activity added \$403 million to the Canadian GDP with \$287 million of the GDP staying in Manitoba. The

equivalent of 4,594 full time jobs were provided by the overall potato complex, with 3,143 of those jobs being serviced in Manitoba and the other jobs contributed to other provinces.

Exhibit 19: Economic Contribution of Manitoba Potato Complex (2013)

Economic Contribution	Manitoba Potato Grower's Contribution to Manitoba Only	Manitoba Potato Grower's Contribution to All of Canada
<i>(values in millions except job numbers)</i>		
Upstream Contribution (from Potato Farming)		
Gross Regional Product	\$59	\$120
Jobs	634	1,156
Output	\$104	\$230
Farming		
Gross Regional Product	\$121	\$121
Jobs	599	599
Output	\$245	\$245
Upstream Contribution (from Potato Processing and Fresh Packing)		
Gross Regional Product	\$45	\$100
Jobs	926	1,855
Output	\$197	\$500
Potato Processing		
Gross Regional Product	\$51	\$51
Jobs	858	858
Output	\$418	\$418
Fresh Packing/Table Stock		
Gross Regional Product	\$11	\$11
Jobs	126	126
Output	\$45	\$45
Total Contribution		
Gross Regional Product	\$287	\$403
Jobs	3,143	4,594
Output	\$1,009	\$1,438

Source: Informa