

**MANITOBA ECONOMIC IMPACT ASSESSMENT
OF CURRENT HORTICULTURAL PRODUCTION**

**MANITOBA
BUREAU OF STATISTICS**

November, 2018



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Executive Summary:

The total Manitoba economic impact of current horticultural production in the province has been estimated using the MBS Economic Impact Assessment Model and MBS Tax Revenue Impact Assessment Model, and produced with funds from Growing Forward.

Data for the study was collected using an on-line survey of Manitoba horticultural producers, including members of the Manitoba Nursery Landscape Association, Prairie Fruit Growers Association, and Vegetable Growers Association of Manitoba.

Data on four types of horticultural production were captured by the MBS horticulture survey; field production of fruit and vegetables, sod cultivated for sale, other nursery products, and greenhouse products.

To estimate total provincial level impacts, MBS assumed the current footprint of these activities to be the average acreage (or greenhouse square footage) as detailed in custom output MBS requested from Statistics Canada on their 2011 and 2016 Censuses of Agriculture.

From this source, MBS estimates current Manitoba horticultural production to include about 5,000 acres of fruit and vegetables, 2,900 acres of sod, 1,600 acres of other nursery products, (9,500 total acres of field horticulture) and 3.18 million square feet of greenhouses.

Averages from 2011 & 2016 Censuses of Agriculture

Field Horticulture	Number of Farms	Total Acreage	Average Acreage
Producing Fruit & Vegetables	135	5,032	38
Producing Sod	12	2,887	251
Producing Other Nursery Products	84	1,566	19

Greenhouse Statistics	Number of Farms	Total Area (million ft ²)	Average Size (ft ²)
Farms Reporting Greenhouses	136	3.18	23,897

Please note that the Manitoba economic impacts presented are contingent on a large number of necessary assumptions, modification of which could produce quite different results. In addition, to avoid giving the illusion of precision, MBS suggests total impacts be rounded as indicated in the highlights section below:

Impact Assessment Highlights:

- **Total annual value of production from horticulture is estimated at roughly \$100 million.**
 - MBS estimates gross revenue from horticultural operations at \$6,000/acre for fruit and vegetable production, \$2,200/acre from sod production, \$15,700/acre for other nursery products, and \$11.50/ft² of greenhouse space.
- **Direct operating expenditures required to achieve this level of output are estimated at \$80 million per year; roughly 40% direct labour costs and 60% non-labour inputs.**
 - Total operating expenditures are estimated at \$4,700/acre for fruit and vegetables, \$1,330/acre for sod production, \$13,800/acre for other nursery products, and \$9.50/ft² of greenhouse area.
- **The total impact to Manitoba GDP at market prices is estimated at \$80 million per year. This is the net monetary impact to the provincial economy.** For each \$1.00 in operating expenditures the GDP impact is estimated at \$1.00, while for each \$1.00 in output the GDP impact is \$0.80.

- **The total impact to Manitoba labour income (which is included in the above GDP figure) is estimated at \$50 million per year.**
- **This level of labour income is expected to support over 1,300 person-years of employment in Manitoba** (synonymous with full-time equivalency - FTE). This total consists of over 900 direct person-years of on-farm employment, and over 400 person-years of spin-off employment in Manitoba.
 - Note, a portion of direct on-farm jobs are held by seasonal foreign workers, however survey data is insufficient to estimate total foreign workers. Findings indicate 1 in 3 direct full-time equivalent fruit and vegetable production jobs are occupied by non-Manitobans. For other nursery products the ratio is 1 foreign FTE job per 9 direct jobs, and for greenhouses 1 in 5 direct FTE jobs are non-Manitobans. No foreign workers were reported working on sod farms. This does not mean there are no foreign workers on any Manitoba sod farms.
- **Total taxes collected in Manitoba by the three levels of government are estimated at \$25 million, consisting of \$11 million in provincial tax, \$11 million in federal tax, and \$3 million in local taxes.**

TOTAL MANITOBA ECONOMIC IMPACT ESTIMATES

(\$Millions)

	FRUIT & VEGETABLE PRODUCTION	SOD PRODUCTION	OTHER NURSERY PRODUCTS	GREENHOUSE PRODUCTS	HORTICULTURE TOTAL IMPACTS
Estimated Production Area	5,032 Acres	2,887 Acres	1,566 Acres	3.18 Million square feet	
Annual Value of Production	30.2	6.3	24.6	36.6	97.7
Total Operating Expenditures	23.7	3.8	21.6	30.2	79.3
GDP at Market Price	24.6	4.2	20.4	29.9	79.1
Labour Income	15.3	2.2	13.9	19.8	51.2
<u>Employment (Person-Years)</u>					
On-Farm Direct	309	32	255	324	921
Direct Suppliers	32	6	32	82	152
<u>Indirect & Induced</u>	76	11	70	95	252
Total Employment	418	49	357	501	1,325

Notes: (1) GDP at Market Prices is the total value of goods and services produced in the Manitoba economy.

(2) GDP at Basic Prices is the value of goods and services produced by Manitoba industry (i.e., GDP at Market Prices excluding taxes and subsidies on products).

(3) All Economic impact estimates presented are in current dollars.

(4) Employment is presented in "Person-Years". A Person-Year is defined as equivalent to one person being fully employed for a period of one year.

(5) Figures may not add to total, due to rounding.

TOTAL MANITOBA TAX REVENUE IMPACT ESTIMATES

(\$Millions)

	FRUIT & VEGETABLE PRODUCTION	SOD PRODUCTION	OTHER NURSERY PRODUCTS	GREENHOUSE PRODUCTS	HORTICULTURE TOTAL IMPACTS
<u>Income Taxes</u>					
Individuals	0.8	0.1	0.7	1.0	2.7
Corporations	0.1	0.0	0.1	0.1	0.4
Other Direct Taxes	2.0	0.3	1.7	2.9	6.9
<u>Indirect Taxes</u>	0.3	0.0	0.2	0.4	0.9
Total Provincial Taxes	3.2	0.5	2.7	4.5	10.9
Local Taxes	0.9	0.1	0.8	1.1	2.9
<u>Federal Taxes</u>	3.3	0.5	2.9	4.6	11.3
Total Collected in Manitoba	7.5	1.1	6.4	10.1	25.1

Notes: (1) Other Direct Taxes includes Retail Sales Tax, Fuel Tax, Tobacco Tax, Liquor and Lotteries Corporation Revenues, and Other Taxes.

(2) Indirect Taxes includes Corporations Taxes, Land Transfer Tax, and the Health and Education Levy.

(3) Tax revenue impacts are based on 2018/19 Manitoba budget estimates and 2013 income tax data.

(4) Figures may not add to total, due to rounding.

Data Source: Manitoba Bureau of Statistics
Economic Impact Assessment Model
Tax Revenue Impact Assessment Model

MANITOBA ECONOMIC IMPACT ASSESSMENT OF CURRENT HORTICULTURAL PRODUCTION

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MANITOBA ECONOMIC IMPACT ASSESSMENT OF CURRENT HORTICULTURAL PRODUCTION

Introduction:

The Manitoba Bureau of Statistics (MBS) was commissioned by Manitoba Agriculture, with funds from Growing Forward, to produce an economic impact assessment of horticulture in Manitoba. In addition to the provincial Department of Agriculture, the economic impact of Manitoba horticulture was supported by the following grower organizations and their members who graciously provided data for the study: the Manitoba Nursery Landscape Association (MBNLA), Prairie Fruit Growers Association (PFGA), and Vegetable Growers Association of Manitoba (VGAM).

An economic impact assessment typically refers to a modeling process used to estimate how the expenditures required for a project or activity can have a larger effect on an economic region through economic multiplying.

The Manitoba economic impact assessment of Manitoba's current horticultural production was produced using the MBS Economic Impact Assessment Model and MBS Tax Revenue Impact Assessment Model, with data collected via an on-line survey of Manitoba horticultural producers.

The MBS Economic Impact Assessment Model estimates the total impacts to Manitoba Gross Domestic product (GDP), labour income and employment flowing from the direct expenditures of a project or activity in Manitoba. Total impacts are the sum of 1) direct expenditure impacts, 2) impacts produced by the direct and indirect suppliers to the project, plus 3) impacts resulting from household re-spending of labour income generated (i.e., the induced effects).

The MBS Tax Revenue Impact Assessment Model uses results from the MBS Economic Impact Assessment Model to estimate total taxes collected in Manitoba by the three levels of government.

The MBS survey of horticultural producers was designed to collect the total revenue from respondents' horticultural operations, total operating expenditures categorized by type, total paid jobs, and information on their horticultural production area, from their last complete year of operations.

Horticultural activities to be captured by the survey included field production of 1) vegetables, fruits, berries and nuts (excluding contract potatoes) 2) sod cultivated for sale, 3) other nursery products, 4) Christmas trees, and 5) anything produced in a greenhouse.

While the MBS survey did not obtain any responses from Christmas tree growers, data for the other four areas of interest was provided by grower organizations and their members. With this data, MBS was able to estimate average revenues, expenditures, and employment requirements on a per acre basis (or per square foot of greenhouse space), and proceed with modeling the total economic impacts on a land use basis.

Sample estimates were then inflated to encompass the current footprint of horticultural production in Manitoba, based on the total acreage (or greenhouse square-footage) for each horticultural sector, as revealed by custom tabulations of Statistics Canada's 2011 and 2016 Censuses of Agriculture.

Establishing a Baseline for Manitoba Horticulture:

What is the impact of horticulture to the provincial economy? The starting point for this question has to be “How large, or what is the extent of horticultural production in Manitoba”.

To answer this first question, the Manitoba Bureau of Statistics (MBS) requested custom output from Statistics Canada’s 2011 and 2016 Censuses of Agriculture. Appendix C presents additional information resulting from this data request.

The custom output requested from Statistics Canada included all relevant census results for “Farms producing greenhouse and nursery products, vegetables and fruits”. The baseline footprint of horticultural production in Manitoba is illustrated by the following table.

Custom Results from 2011 & 2016 Censuses of Agriculture

Manitoba Farms Producing Greenhouse & Nursery Products, Vegetables & Fruits	2011 Census			2016 Census			Average of 2011 and 2016		
	Number of Farms	Total Acreage	Average Acreage	Number of Farms	Total Acreage	Average Acreage	Number of Farms	Total Acreage	Average Acreage
Total Number of Farms in Scope	542	300,239	554	463	270,771	585	503	285,505	569
Producing Fruit & Vegetables	121	5,241	43	149	4,823	32	135	5,032	38
Share of Total	22.3%	1.7%		32.2%	1.8%		26.9%	1.8%	
Producing Sod	12	2,936	245	11	2,837	258	12	2,887	251
Share of Total	2.2%	1.0%		2.4%	1.0%		2.3%	1.0%	
Producing Other Nursery Products	97	1,934	20	70	1,197	17	84	1,566	19
Share of Total	17.9%	0.6%		15.1%	0.4%		16.6%	0.5%	
Sum of field horticulture		10,111			8,857			9,484	
Share of Total		3.4%			3.3%			3.3%	

Greenhouse Statistics	Number of Farms	Total Area (ft ²)	Average Size (ft ²)	Number of Farms	Total Area (ft ²)	Average Size (ft ²)	Number of Farms	Total Area (ft ²)	Average Size (ft ²)
Farms Reporting Greenhouses	154	3,059,519	19,867	118	3,295,483	27,928	136	3,177,501	23,897
Share of Total	28.4%			25.5%			27.1%		

Not shown in table: Acreage of other field crops, summer fallow, pastures, woodlands, wetlands, Christmas trees and other land areas.

To put horticultural production in context, the 2011 Census of Agriculture counted 15,877 farms in Manitoba (not shown), averaging 1,221 acres (19.4 million acres total).

- Farms with horticultural production in 2011 numbered 542 (3.4% of Manitoba farms), and accounted for 300,239 total acres (1.5% of total Manitoba farm area), of which 10,111 acres were used for horticultural production. This represents just 0.05% of total Manitoba farm area.
- Of these 542 farms with horticultural production, 121 (22.3%) produced fruit, vegetables, nuts or berries on plots averaging 43 acres; 12 farms (2.2%) produced sod on 2,936 acres (245 acres average); 97 farms (17.9% of the horticultural sub-set) grew other nursery products on plots averaging 20 acres; and 154 of these 542 farms (28.4%) had greenhouse space totaling 3.06 million square feet (19,867 sq.ft. average).
- Finally, of the 300,239 acres claimed by the 542 farms with horticultural activities, 1.7% of this land was used for fruit and vegetable production, 1.0% for sod production, and 0.6% for other nursery products. In other words, despite being horticultural producers, only 3.4% of these farms’ total area (plus their greenhouse space) was used for horticulture.

The 2016 Census of Agriculture counted 14,791 farms in Manitoba (not shown), averaging 1,279 acres (18.9 million acres total).

- Farms with horticultural production in 2016 numbered 463 (3.1% of Manitoba farms), and accounted for 270,771 total acres (1.4% of total Manitoba farm area), of which 8,857 acres were used for horticultural production. This represents just 0.05% of total Manitoba farm area.
- Of these 463 farms with horticultural production in 2016, 149 (32.2%) produced fruit, vegetables, nuts or berries on plots averaging 32 acres; 11 farms (2.4%) produced sod on 2,837 acres (258 acres average); 70 farms (15.1% of the horticultural sub-set) grew other nursery products on plots averaging 17 acres; and 118 of these 463 farms (25.5%) had greenhouse space totaling 3.30 million square feet (27,928 sq.ft. average).
- Again, to put horticulture in context, of the 270,771 acres reported by the 463 farms with horticultural activities, 1.8% of this land was used for fruit and vegetable production, 1.0% for sod production, and 0.4% for other nursery products. Therefore, only 3.3% of these farms' total area (plus their greenhouse space) was used for horticulture.

Information from the two Censuses of Agriculture was obtained primarily to establish the gross acreage used in the production of fruit and vegetables, sod, and other nursery products, and greenhouse square footage. While there is great variability year-to-year in number of farms and total acreage (and the general trend of fewer but larger farms is acknowledged as fact), the average of the 2011 and 2016 census results is likely the best estimate of current horticultural production area.

As a result, the economic impact estimates presented are based on the average of 2011 and 2016 censuses as follows: 5,032 acres of fruit and vegetable production, 2,887 acres of sod production, 1,566 acres of other nursery products, and 3.18 million square feet of greenhouse space. These figures were used to estimate the total annual impacts of current Manitoba horticultural production.

An additional fact to acknowledge is that while some producers may focus exclusively on fruit and vegetables, or sod, or other nursery products, or be exclusively greenhouse operations, most of the province's horticultural producers do these things in addition to larger crop or livestock operations.

Also, as illustrated by the MBS survey results (next section), most of the establishments with horticultural production do not limit themselves to just one type of horticulture, but will do two, three, or all of these things in combination. As a result it was a challenging process to estimate the operating data for each type of production covered in the analysis.

Statistics Canada avoids this issue in producing their Annual Greenhouse, Sod and Nursery Survey. This survey collects data from greenhouse operators, sod producers, and producers of other nursery products, but takes data from producers doing only one of these activities, not in combination.

The Annual Greenhouse, Sod and Nursery Survey was a very useful resource in MBS's estimation of horticultural operating data, however this survey does not include field production of fruit and vegetables.

MBS Survey of Horticultural Producers:

Aside from having a suitable model to use, the greatest requirement for producing an economic impact assessment is data. Ideally data that conveys the total expenditures of the activity under study, along with information on direct employment. As the Census of Agriculture provides very little information on farming expenditures, this information had to be collected from producers.

Producers' contact information for an on-line horticulture survey was provided to MBS by Manitoba Agriculture. Survey recipients included all members of the following producer organizations, Manitoba Nursery Landscape Association (MBNLA), Prairie Fruit Growers Association (PFGA), and Vegetable Growers Association of Manitoba (VGAM), plus additional horticultural producers for which Manitoba Agriculture had direct knowledge and contact information.

In general the survey asked producers for information on their most recent full year of operations, including gross sales, itemized expenditures, and all paid employment for the production and marketing of their own horticultural products only.

Expenditure categories for the survey were comprised of a subset of the expenditure categories previously used in the Census of Agriculture (i.e., used in 2011, but dropped from the 2016 census). This reuse of Statistics Canada categories was done with the expectation that producers will have previously tabulated their operating expenditures on the basis of these categories, and therefore be consistent in their responses.

Non-Labour Expenditure Categories:

- Fertilizer and other soil amendment purchases,
- Seed and plant purchases (excluding purchases for resale)
- Custom work, contract work and hired trucking
- All fuel expenses (diesel, gasoline, oil, wood, natural gas, propane, etc.)
- Repairs and maintenance to farm machinery, equipment and vehicles
- Repairs and maintenance to farm buildings and fences
- Rental and leasing of land and buildings
- Rental and leasing of farm machinery, equipment and vehicles
- Electricity, telephone and all other telecommunication services
- Farm interest expenses
- All other expenses (excluding depreciation and capital cost allowance)

For estimation of direct on-farm employment, the MBS survey collected the total labour cost, number of positions, and number of weeks worked by different classes of worker (including year-round full-time and part-time, and seasonal or temporary workers). There were also follow-up questions about imported labour, such as those employed through the Seasonal Agricultural Workers Program (SAWP). The objective was to collect information sufficient to enable MBS to estimate the number of full-time equivalent (FTE) jobs per operating entity, and the direct person-years of on-farm employment per acre of production.

The MBS Horticulture Survey is provided in Appendix B for reference.

A total of 269 unique producer organizations were contacted by MBS for inclusion in the horticulture survey, from which MBS received 68 responses from active producers. This is only 25% of the organizations contacted, but (according to Census of Agriculture estimates) the total acreages in these responses accounted for about 30-60% of the land area used for each type of horticultural production.

Fruit & Vegetable Production:

This section deals exclusively with field production of all variety of fruits and vegetables, including berry farms, but explicitly excluding potatoes grown under contract to food processors. This section also excludes any greenhouse production of fruit and vegetables.

MBS survey responses included 47 organizations growing fruit and vegetables on 2,401 acres (51 acres on average). This total represents 48% of the fruit and vegetable acreage from the 2011 and 2016 Censuses of Agriculture (5,032 acres on average).

Responses received by MBS included three large farms (each with over 500 acres of fruit and vegetables) and 44 much smaller, more typical, fruit and vegetable growers (none greater than 100 acres) averaging 11 acres of fruit and vegetable production.

Of these 47 responses, 27 produced only fruit and vegetables, while 20 fruit and vegetable producers also grew sod, other nursery products, and/or greenhouse products in various combinations.

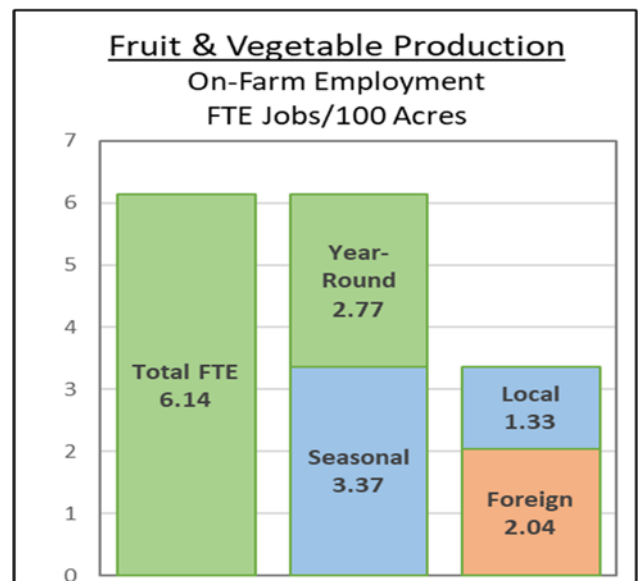
The 27 singular fruit and vegetable growers accounted for 1,678 acres (62 acres on average), which represents 70% of the total fruit and vegetable acreage in the sample (2,401 acres). These singular growers' sales revenue ranged from \$0 to \$22,700 per acre (\$4,800 unweighted average); non-labour operating expenditures ranged from \$650 to \$9,600 per acre (\$2,400 average); labour costs ranged from \$0 to \$4,500 per acre (\$1,300 average); and for these 27 producers, direct on-farm employment is estimated at 5.6 full-time equivalent jobs per 100 acres.

Factoring in the information from the remainder of the sample (i.e., the 20 responses confounded by sod, other nursery products, and/or greenhouse operations), resulted in the following final estimates for fruit and vegetable production in Manitoba:

- Gross Sales/Acre: \$6,000
- Non-Labour Expenditures/Acre: \$2,700
- Labour Expenditures/Acre: \$2,000
- Total Operating Expenditures/Acre: \$4,700
- On-Farm Employment: 6.14 FTE Jobs/100 Acres

Based on the average fruit and vegetable acreage from the two previous Censuses of Agriculture (5,032 acres), annual value of fruit and vegetable production is estimated at \$30.2 million; total operating costs are \$23.7 million (\$10.1 million in labour costs and \$13.6 million for non-labour expenditures); and direct on-farm employment comes to 309 full-time equivalent jobs.

The 309 direct on-farm jobs are further identified as 139 year-round full-time equivalent jobs and 170 FTE seasonal/temporary jobs, with the seasonal/temporary component consisting of 67 FTE jobs held by Manitobans and 103 FTE jobs filled by imported labour.



Far from a homogeneous sector, fruit and vegetable producers sold directly into commercial channels, had their own stores or stands for direct to consumer sales, had membership models offering regular home deliveries of produce, sold their products at farmers' markets, and invited customers to come pick their own fresh fruits and vegetables.

The relative importance of each of these marketing approaches is not uncovered in this study, and the extent to which direct on-farm employment is involved in the sales aspect of these businesses is not known. However, to capture the direct impacts of horticultural activities and avoid inclusion of additional garden-centre type jobs and expenditures, the MBS survey requested respondents to provide only the operating costs and employment used in the production and marketing of their own products.

Survey results, and comments provided by respondents, give MBS confidence that these instructions were correctly followed.

An issue that was uncovered however is a few operators indicated they had not included any income for themselves (although this information had been requested). As a result, the total employment impacts presented will be somewhat conservative in nature, and it can be stated that the Manitoba economic impacts of horticulture are at least as big as presented.

Greenhouse Production:

Survey responses were received from 31 operations with producing greenhouses totaling 1.43 million square feet (46,221 sq.ft. on average). This total represents 45% of the total greenhouse square footage from the past two Censuses of Agriculture (3.18 million square feet average).

Responses received by MBS included 7 stand-alone greenhouse operations, and 22 producers with just a small amount of confounding (that is, also having field production of fruit and vegetables, sod, and/or other nursery products).

The seven singular greenhouse operations accounted for 1.06 million square feet, and the 22 operators with minimal confounding had 0.28 million square feet of greenhouses.

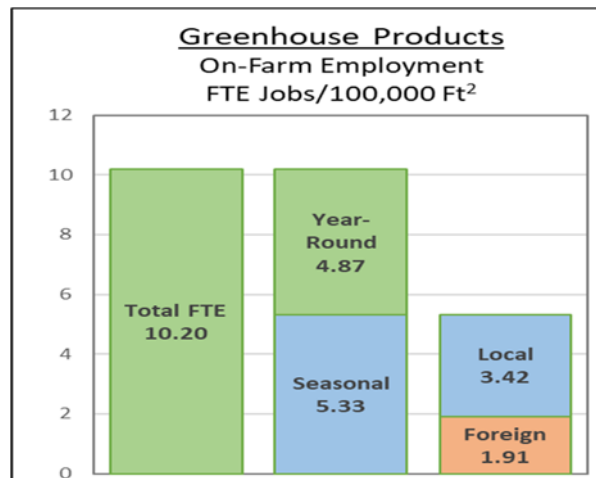
The singular growers' sales revenue ranged from \$0 to \$29.50 per sq.ft. (\$11.22 unweighted average); non-labour operating expenditures ranged from \$1.80 to \$13.20 per sq.ft. (\$5.18 average); labour costs ranged from \$0 to \$7.90 per sq.ft. (\$3.99 average); and full-time equivalent on-farm employment is estimated at 10.2 jobs/100,000 sq.ft of greenhouse space.

Factoring in the information from the 22 operations that had minimal confounding resulted in the following final estimates for greenhouse operations:

- Gross Sales/square foot: \$11.50
- Non-Labour Expenditures/square foot: \$ 5.50
- Labour Expenditures/square foot: \$ 4.00
- Total Operating Expenditures/square foot: \$ 9.50
- On-Farm Employment: 10.2 FTE Jobs/100,000 ft²

Based on the average greenhouse area from the two previous Censuses of Agriculture (3.18 million square feet), annual value of greenhouse production is estimated at \$36.6 million; total operating costs are \$30.2 million (\$12.7 million in labour costs and \$17.5 million for non-labour expenditures); and direct greenhouse employment in Manitoba is estimated at 324 full-time equivalent jobs.

The 324 direct greenhouse jobs are further identified as 155 year-round full-time equivalent jobs and 169 seasonal/temporary jobs (FTE). The seasonal/temporary component breaks down to 109 FTE jobs held by Manitobans and 60 FTE jobs filled by imported labour.



Comparison to Statistics Canada's Annual Greenhouse, Sod and Nursery Survey

The above revenue and expenditure estimates derived from the MBS horticulture survey are quite comparable to the findings of Statistics Canada's Annual Greenhouse, Sod and Nursery Survey, from which MBS estimates gross sales of \$9.47/ft², non-labour expenditures of \$5.91/ft², and greenhouse labour costs of \$3.68/ft² (averages of 2015-2017).

These similar results give credence to the MBS survey. However, for the reporting of employment, where MBS attempts to standardize jobs into full-time equivalency, the Statistics Canada survey reports number of positions, summarized by MBS as follows: 26.5 total employees (per 100,000 square feet of greenhouse), consisting of 5.2 permanent positions and 21.4 seasonal positions.

Their estimated 881 total greenhouse jobs (2015-2017 average) would be compared to the MBS estimate of 324 person-years of direct greenhouse employment. This seems not unreasonable considering the limited number of months greenhouses typically operate (i.e., 7-8 months), and the large contingent of seasonal workers (i.e., 80% of total positions according to the Statistics Canada's survey).

Where Statistics Canada has an average of 709 seasonal workers, MBS estimates 169 full-time equivalent seasonal or temporary jobs; implying full-time hours for one quarter of the year for each seasonal worker.

Greenhouse Statistics	Censuses of Agriculture: 2011 & 2016 Avg	Greenhouse, Sod & Nursery Survey: 2015-2017 Avg	MBS Survey	
			Total From Sample	Estimated Provincial Totals
Number of Farms	136	145	31	
Total Area (Millions of sq.ft.)	3.18	3.32	1.43	3.18
Average Area (sq.ft.)	23,364	22,847	46,221	
Gross Sales from Production (\$000's)		\$31,435		\$36,570
Average per Square Foot (\$)		\$9.47		\$11.50
Non-Labour Expenditures (\$000's)		\$19,618		\$17,490
Average per Square Foot (\$)		\$5.91		\$5.50
Total Labour Expenditures (\$000's)		\$12,223		\$12,720
Average per Square Foot (\$)		\$3.68		\$4.00
GREENHOUSE EMPLOYMENT		POSITIONS		FTE JOBS
Year-Round		172		155
Seasonal		709		169
Total		881		324
Average per 100,000 ft²		26.5		10.2

Sod Production:

Survey responses were returned from 6 organizations growing sod on 1,748 acres (291 acres on average). This total represents 61% of total sod acreage from the 2011 and 2016 Censuses of Agriculture (2,887 acres on average).

Responses received by MBS included three sod only farms, accounting for 1,700 acres (567 acre average), and three smaller sod operations combined/confounded with other horticulture categories.

Sod only operations' sales revenue ranged from \$2,000-\$2,700 per acre (\$2,190 unweighted average); non-labour operating expenditures were \$800-\$2,300 per acre (\$930 average); labour costs ranged from \$420-\$525 per acre (\$480 average); and full-time equivalent sod employment is estimated at 1.1 jobs per 100 acres.

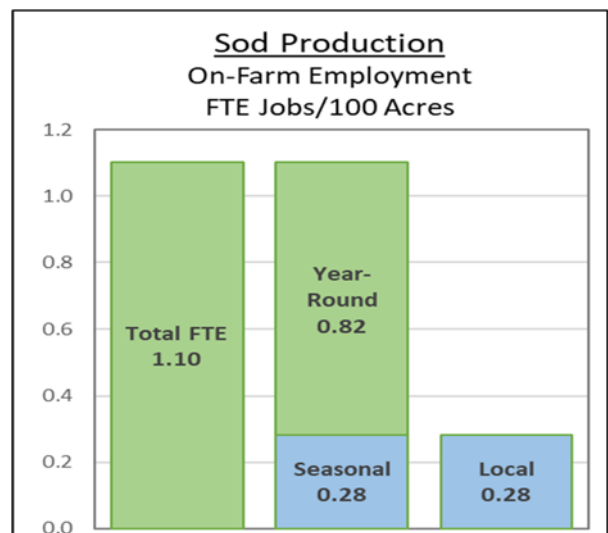
Final estimates used to calculate annual sod production impacts in Manitoba are as follows:

- Gross Sales/Acre: \$2,200
- Non-Labour Expenditures/Acre: \$ 850
- Labour Expenditures/Acre: \$ 480
- Total Operating Expenditures/Acre: \$1,330
- On-Farm Employment: 1.10 FTE Jobs/100 Acres

Based on the average sod acreage from the two previous Censuses of Agriculture (2,887 acres), annual value of sod production is estimated at \$6.35 million; total operating costs are \$3.84 million (\$1.39 million in labour costs and \$2.45 million for non-labour expenditures); and total sod farm employment in Manitoba is estimated at 32 full-time equivalent jobs.

The 32 direct sod production jobs are comprised of 24 year-round full-time equivalent jobs and 8 seasonal/temporary full-time equivalent jobs (all held by Manitobans, with no imported labour reported).

The sod production category differs from the other three in that 1) it has much lower input costs per acre, 2) seasonal/temporary labour per acre (on a full-time equivalent basis) is less than the permanent employment reported, and 3) no foreign workers were reported for sod production.



Comparison to Statistics Canada's Annual Greenhouse, Sod and Nursery Survey

MBS survey results for sod production are also quite comparable to findings of Statistics Canada's Annual Greenhouse, Sod and Nursery Survey, from which MBS estimates sales at \$2,440/acre, non-labour expenditures at \$1,160/acre, and direct labour at \$440/acre (averages of 2015-2017 surveys).

For the reporting of employment, where MBS specifies full-time equivalent jobs, Statistics Canada reports number of positions, summarized as follows: 2.3 total employees per 100 acres, comprised of 0.7 permanent positions and 1.6 seasonal positions.

Their estimate of 52 total positions (average of 2015-2017 surveys) compares well to the MBS estimate of 32 person-years of total Manitoba sod farm employment.

Sod Production	Censuses of Agriculture: 2011 & 2016 Avg	Greenhouse, Sod & Nursery Survey: 2015-2017 Avg	MBS Survey	
			Total From Sample	Estimated Provincial Totals
Number of Farms	12	10	6	
Total Acres	2,887	2,233	1,748	2,887
Average Acres	251	223	291	
Gross Sales from Production (\$000's)		\$5,441		\$6,350
Average per Acre (\$000's)		\$2.44		\$2.20
Non-Labour Expenditures (\$000's)		\$2,584		\$2,454
Average per Acre (\$000's)		\$1.16		\$0.85
Total Labour Expenditures (\$000's)		\$979		\$1,386
Average per Acre (\$000's)		\$0.44		\$0.48
ON-FARM EMPLOYMENT		POSITIONS		FTE JOBS
Year-Round		15		24
Seasonal		37		8
Total		52		32
Average per 100 Acres		2.3		1.1

Other Nursery Products:

The other nursery products category includes trees, shrubs, flowers, and other ornamental plants not grown in a greenhouse. **The MBS survey response included 15 operations growing other nursery products on 446 acres (30 acres on average). This total represents 28% of the average acreage from the two previous Censuses of Agriculture (1,566 acres on average, based on 97 farms totaling 1,934 acres in 2011 and just 70 farms totaling 1,197 acres in 2016).**

Of the 15 operations reporting other nursery products, two producers had 100 acres or more used for this purpose. The 13 smaller operations ranged in size from ¼ acre to 60 acres; with an average of 8.5 acres. In comparison, average nursery product area from the two censuses is 19 acres.

One fact became apparent in examining the responses for this category; there are almost no examples of operations growing just other nursery products. Data for the category is highly entangled with other horticultural operations, primarily greenhouses.

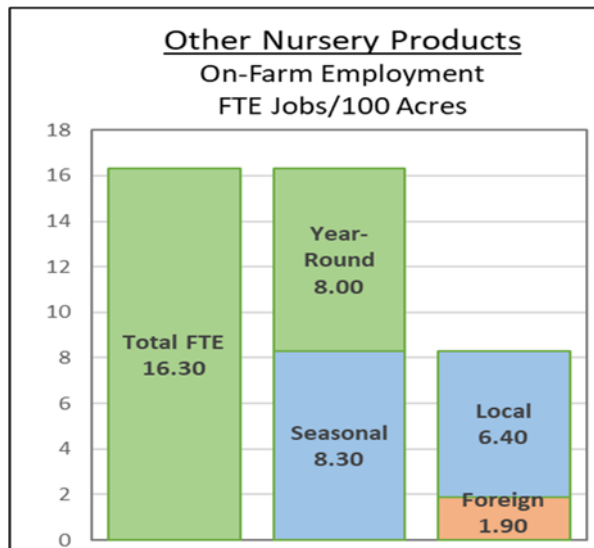
Just three survey respondents were exclusively growing other nursery products. These three account for 86 acres of the total 446 acres of other nursery products reported to MBS. The remaining 12 respondents, confounded by other production activities, accounted for 360 acres of other nursery products, as well as 32 acres of fruit/vegetables, 30 acres of sod, and almost 300,000 square feet of greenhouses.

MBS's uncovering of the operating data for other nursery products, by the removal of confounding information, resulted in per acre cost and employment estimates that were deemed to be too high in comparison to averages calculated from Statistics Canada's Annual Greenhouse, Sod and Nursery Survey. As a result, initial estimates from the MBS survey were averaged with the Statistics Canada survey results as follows:

	MBS Survey	Stats Canada	Final Estimates
Gross Sales/Acre:	\$20,000	\$11,400	\$15,700
Non-Labour Expenditures/Acre:	\$10,000	\$ 6,200	\$ 8,100
Labour Expenditures/Acre:	\$ 7,000	\$ 4,400	\$ 5,700
Total Operating Expenditures/Acre:	\$17,000	\$10,600	\$13,800
On-Farm FTE Jobs	20.0/100 Acres	Not Estimated	16.3/100 Acres

Based on average nursery product acreage from the two previous censuses (1,566 acres) and the average per acre results of the MBS and Statistics Canada surveys, the annual value of output for other nursery products in Manitoba comes to \$24.6 million; total operating costs are \$21.6 million (\$8.9 million in labour costs and \$12.7 million for non-labour expenditures); and direct on-farm employment is estimated at 255 full-time equivalent jobs.

The 255 direct on-farm jobs consist of 125 year-round full-time equivalent jobs and 130 seasonal/temporary jobs (FTE), with the seasonal/temporary component consisting of 100 FTE jobs held by Manitobans and 30 FTE jobs filled by imported labour.



Comparison to Statistics Canada's Annual Greenhouse, Sod and Nursery Survey

Published results of Statistics Canada's Greenhouse, Sod and Nursery Survey were used to modify expenditure estimates produced from the MBS horticultural survey. Following this treatment, MBS's estimate of total operating expenditures per acre is just 30% higher than indicated by the Statistics Canada data (as opposed to 60% higher).

For the reporting of employment, where MBS estimates full-time equivalent jobs, Statistics Canada reports number of positions, summarized as follows: 24.7 total employees per 100 acres, comprised of 7.6 permanent positions and 17.1 seasonal positions.

The estimate of 273 total positions (average of 2015-2017 surveys) is the figure to compare to MBS's 255 full-time equivalent on-farm jobs. However, if based on the same acreage as the MBS estimate (1,566 acres) the number of on-farm positions estimated by Statistics Canada would be increased by 42% (to 387). Also, the MBS survey was designed to include horticultural sales and service jobs, which may not have been included in Statistics Canada's Greenhouse, Sod & Nursery Survey.

Other Nursery Products	Censuses of Agriculture: 2011 & 2016 Avg	Greenhouse, Sod & Nursery Survey: 2015-2017 Avg	MBS Survey	
			Total From Sample	Estimated Provincial Totals
Number of Farms	84	70	15	
Total Acres	1,566	1,105	446	1,566
Average Acres	19	16	30	
Gross Sales from Production (\$000's)		\$12,599		\$24,586
Average per Acre (\$000's)		\$11.4		\$15.7
Non-Labour Expenditures (\$000's)		\$6,899		\$12,685
Average per Acre (\$000's)		\$6.2		\$8.1
Total Labour Expenditures (\$000's)		\$4,840		\$8,926
Average per Acre (\$000's)		\$4.4		\$5.7
ON-FARM EMPLOYMENT		POSITIONS		FTE JOBS
Year-Round		84		125
Seasonal		189		130
Total		273		255
Average per 100 Acres		24.7		16.3

Economic Impact Assessment Methodology:

MBS's general approach to producing economic impact estimates is to identify the full range of expenditures for the project or activity in question. Any expenditures identified as being for goods and services purchased directly from suppliers located outside of Manitoba are excluded from analysis, except in regards to sales tax that may be collected.

Unless explicitly identified as non-Manitoba expenditures, procurement is generally assumed to be through Manitoba based suppliers. These direct Manitoba expenditures, ideally having been categorized into specific types of goods and services, are then coded to one or more of the almost five-hundred commodities contained in the MBS model.

The MBS model takes the total expenditures for the activity under study and filters them to estimate the base cost of each item purchased, by identifying the likely transportation, wholesale and retail mark-ups, and any taxes that would be included in the purchaser price. Next the model states the proportion of each item purchased that would typically be provided by Manitoba industry. The model then simulates the engagement of each industry that would produce goods and services being used as inputs.

MBS collected model friendly expenditures data for Manitoba horticultural operations using a survey that was developed for this purpose. The survey asked producers for information on their most recent full year of operations, including gross sales, itemized expenditures, and all paid employment for the production and marketing of their own horticultural products.

Expenditure categories for the survey were comprised of a subset of the expenditure categories previously used in the Census of Agriculture, as follows:

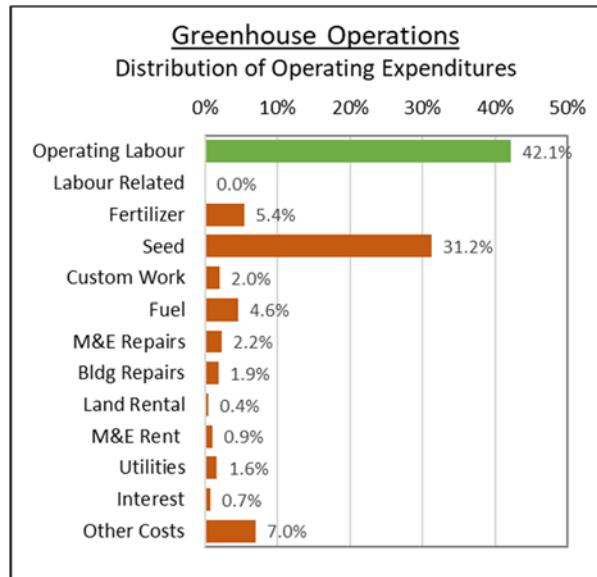
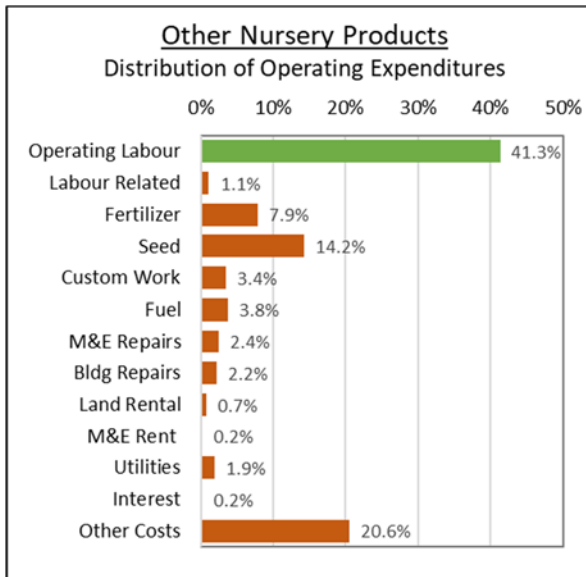
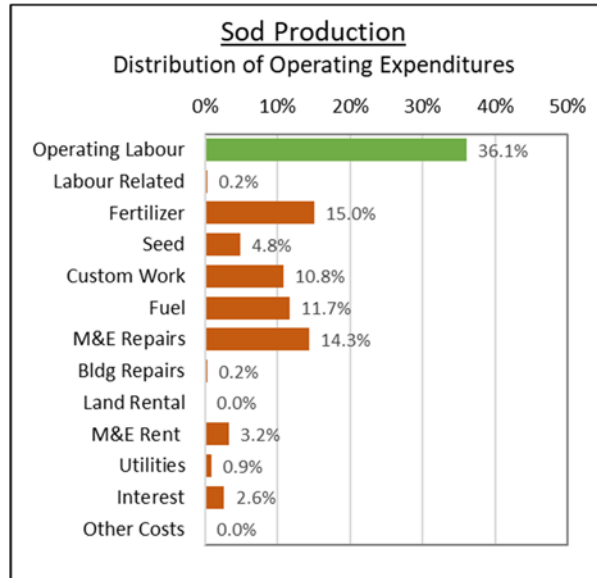
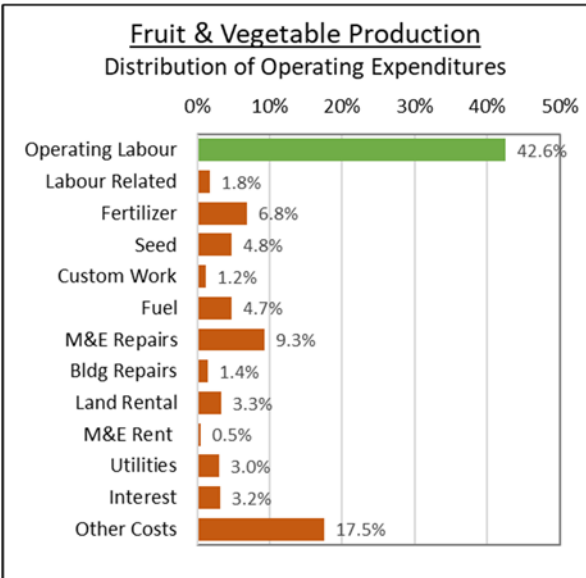
Non-Labour Expenditure Categories:

- Fertilizer and other soil amendment purchases,
- Seed and plant purchases (excluding purchases for resale)
- Custom work, contract work and hired trucking
- All fuel expenses (diesel, gasoline, oil, wood, natural gas, propane, etc.)
- Repairs and maintenance to farm machinery, equipment and vehicles
- Repairs and maintenance to farm buildings and fences
- Rental and leasing of land and buildings
- Rental and leasing of farm machinery, equipment and vehicles
- Electricity, telephone and all other telecommunication services
- Farm interest expenses
- All other expenses (excluding depreciation and capital cost allowance)

For inputting to the model, the total expenditure identified for each of the above categories was distributed to a previously defined list of commodities from the model, with specific distribution of expenditures guided by detailed industry input data, from what are referred to as the Industry Use Tables.

To be more specific, MBS used detailed information on the inputs to 1) "Crop production", and 2) "Greenhouse, nursery and floriculture production" (two of the industries available in Statistics Canada's Input-Output Tables), to distribute the expenditure information collected by the MBS horticulture survey.

Non-labour expenditures accounted for roughly 60% of total horticultural operating costs, ranging from 57% of fruit and vegetable production costs to 64% of sod inputs. The final operating expenditure distributions for each of the horticultural areas studied are provided in the following set of charts.



One can see there is real distinction between the inputs required for each type of operation. However the most important non-labour expenditure categories for all four production activities tend to include fertilizer, seed, custom work, fuel, machinery & equipment repairs, and other costs. These six categories accounted for over 50% of total operating costs for sod, other nursery products, and greenhouses, and 44% of total fruit and vegetable operating costs.

Most of these expenditure categories are fairly self-explanatory, and there is also additional information in the MBS horticulture survey on what they are intended to include. For instance, Labour Related costs consist primarily of shelter and transportation costs generally associated with seasonal foreign workers.

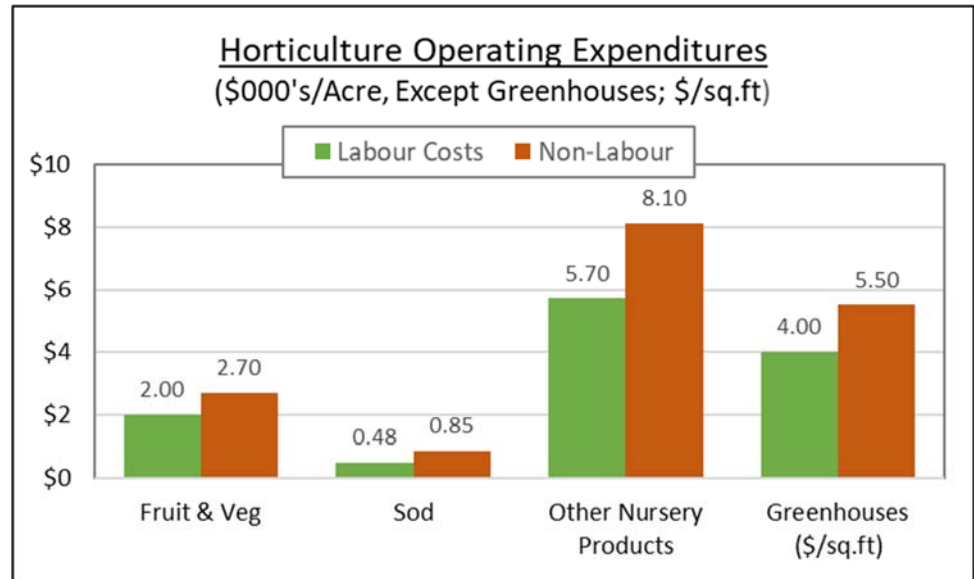
Other Costs, which is a large expenditure category for fruit and vegetable production, other nursery products, and greenhouses, consists primarily of expenditures on services like insurance, accounting and legal services, etc., but also contains miscellaneous purchases of goods not included elsewhere.

Seed expenditures are especially noteworthy, accounting for about 5% of total inputs to fruit and vegetable, and sod production, 14% of other nursery product inputs, and almost 1/3 of total greenhouse inputs.

Machinery and equipment repairs, not surprisingly, are a larger concern for operations requiring field work; therefore accounting for 14% of sod inputs and 9% of fruit and vegetable inputs, versus about 2% of greenhouse and other nursery product costs.

The above operating expenditure distributions, combined with the per-acre expenditure estimates (and total estimated acres for each type of production), result in the total expenditures modelled in the MBS analysis.

For the highly important labour component, the MBS survey collected the labour cost, number of positions, and number of weeks worked by different classes of worker, including follow-up questions about imported labour (such as those employed through the Seasonal Agricultural Workers Program).



Labour costs and job counts for the different classes of workers were processed to estimate full-time equivalent positions for each responding operation, and the average cost for each full-time equivalent on-farm job for each horticultural areas.

The Direct on-farm employment estimates presented in the summary tables are the final result of this process.

These job and wage estimates become important inputs to the MBS Economic Impact Assessment Model.

	Direct Labour Cost (\$millions)	Direct On-Farm Jobs (person-years)	Average Labour Cost (\$/person-years)
FRUIT & VEGETABLES	\$10.1	309	\$32,600
SOD PRODUCTION	\$1.4	32	\$43,600
OTHER NURSERY PRODUCTS	\$8.9	255	\$35,000
GREENHOUSE PRODUCTION	\$12.7	324	\$39,200
TOTAL HORTICULTURE	\$33.1	921	\$36,000

Tax revenue estimates are produced through a conversation between the MBS Economic Impact Assessment Model, and the MBS Tax Revenue Impact Assessment Model. The tax model responds to the impacts to GDP, labour income, and employment by utilizing assumed relationships between these outputs and specific provincial taxes. Estimation of federal and local tax revenue collected in Manitoba is based largely on relationships found to exist between provincial and local, and provincial and federal taxes.

Typically the MBS tax model provides a good starting point in the estimation of provincial, local and federal taxes. However, the MBS economic model provides an independent and reliable tabulation of taxes and subsidies on products, which is incorporated into the MBS tax estimates.

For the Manitoba economic impact assessment of horticultural production, MBS has adjusted the tax estimates to ensure inclusion of taxes on fuel. On the other hand, no special tax adjustments for farm land, or other unknown issues, have been implemented in the MBS tax revenue estimates.



Total Economic Impacts of Current Horticultural Production:

Current Manitoba horticultural production, including fruit and vegetables, sod, other nursery products, and greenhouse operations, is estimated to occupy about 9,500 acres of Manitoba farm land, and 3.18 million square feet of enclosed greenhouse area.

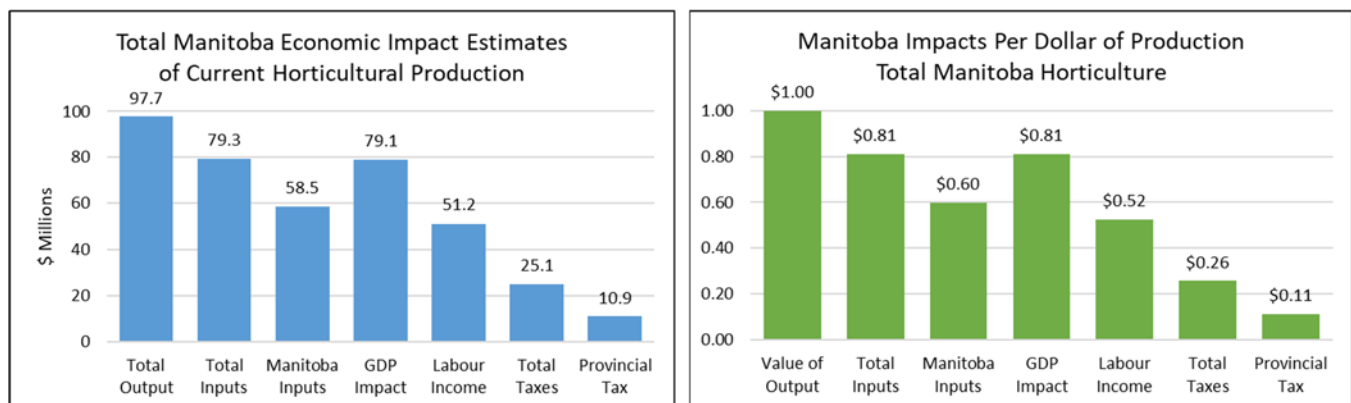
The MBS economic impact assessment of these operations is modeled on the production data (revenue, expenditures and employment) collected via the MBS horticulture survey for each of these production activities.

Economic impact summary tables present the total impacts estimated for each economic measure, such as gross domestic product (GDP), labour income, employment and taxes. Total impacts are the sum of the direct impact of operator expenditures, the impact of direct and indirect industries supplying goods and services to meet horticultural producers' demand, and the household (or induced) impact caused by the respending of income earned by Manitoba households.

Please note that all impacts presented are built on a large framework of necessary assumptions, modification of which could result in quite different estimates. In addition, the estimates specified for total Manitoba horticulture will have greater validity than an individual type of production.

Total value of production from Manitoba horticultural activities included in the study is estimated at \$98 million per year. The relative contribution to this total is estimated at 31% from production of fruit and vegetables, 6.5% from sod, 25% from other nursey products, and 37.5% from greenhouse products. To put horticulture in a broader context, \$98 million represents 1.6% of total Manitoba farm receipts (average \$6.0 billion for 2013-2017).

To achieve this level of output, Manitoba horticultural producers spend about \$79 million per year on running their operations, 30% of which is for fruit and vegetables, 5% for sod production, 27% for other nursery products, and 38% for greenhouse operation. Horticultural operating expenditures of \$79 million represents 1.7% of total Manitoba farm operating expenditures (which averages \$4.7 billion for 2013-2017).



Given the specific goods and services used in horticultural operations, the MBS Economic Impact Assessment Model estimates these expenditures to be 74% directly supplied by Manitoba industries, and 26% supplied by non-Manitoba industries, resulting in a Direct Manitoba Supply estimate of \$58.5 million, as shown in Summary Table-1.

- Summary Table-3 presents the Manitoba impact estimates as a proportion of total farm operating expenditures. It shows that sod production has the lowest proportion of expenditures likely to be supplied by Manitoba industry (67.4%), while the other three production activities' expenditures are about 75% supplied by Manitoba industry.
- This is due to a number of factors. Compared to the other production areas, sod production has a higher reliance on fuel and fertilizer (amounting to more than 25% of total operating costs, compared to 10-12% for the other three production activities), commodities which are mostly produced outside Manitoba. Also, sod production requires relatively less labour than the other three production activities. Labour expenditures make up 36% of sod production expenditures, compared to 41% for other nursery products, 42% for greenhouse operations, and 43% for fruit and vegetable production.

Production and delivery of \$58.5 million in goods and services in direct support of provincial horticulture operations is estimated to lever \$35 million in additional Manitoba based expenditures, resulting in Gross Manitoba Expenditures of \$93.5 million.

- This is the gross monetary impact to the provincial economy. However, this gross expenditures statistic contains double-counting of the same dollars being spent and respent in a chain of transactions.
- Measures of Gross Domestic Product (GDP) are designed to remove this double-counting by summing only the unduplicated value added at each transaction point, thus providing an estimate of the net monetary impact to the provincial economy.

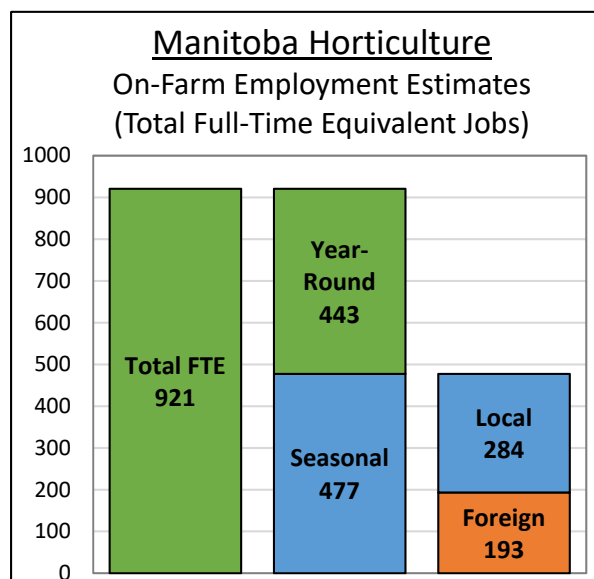
The total impact of current horticultural production to provincial GDP at Market Prices is estimated at \$79 million. Therefore, for each \$1.00 of total horticultural output, the GDP impact is estimated at \$0.81 (Summary Table-2), and for each \$1.00 of horticultural input costs, the GDP impact is estimated at 99.7 cents (Summary Table-3).

The largest component of GDP is typically labour income. The total impact to Manitoba labour income resulting from current horticultural production is estimated at \$51 million. Therefore, for each \$1.00 of total horticultural output, the Manitoba labour income impact is estimated at \$0.52 (Summary Table-2), and for each \$1.00 of horticultural input costs, labour income is estimated at \$0.65 (Summary Table-3).

Note that the total Manitoba labour income estimate consists of \$33 million in direct on-farm labour costs, plus \$18 million in spin-off labour income estimated by the MBS Economic Impact Assessment Model.

A total of 1,325 person-years, or full-time equivalent (FTE) jobs, are supported by the \$51 million in total labour income generated. This total includes 920 FTE on-farm jobs, 150 FTE jobs among direct suppliers to horticultural operations, and 250 additional spin-off jobs.

- For each \$1.0 million in output, 13.6 person-years of employment in Manitoba are sustained, including 9.4 person-years of on-farm employment (Summary Table-2).



- For each \$1.0 million in operating expenditures, total employment is estimated at 16.7 person-years; 11.6 person-years of on-farm employment and 5.1 person-years of spin-off employment (Summary Table-3).

Total taxes collected in Manitoba by the three levels of government are estimated at \$25 million per year. Total provincial tax revenue is estimated at \$11 million annually, Manitoba municipal taxes at \$3 million, and federal taxes at \$11 million.

- Total tax collections amount to \$0.26 for each \$1.00 in total horticultural output (Summary Table-2), or \$0.32 for each \$1.00 in total operating costs (Summary Table-3).

SUMMARY TABLE-1: MANITOBA HORTICULTURE - TOTAL IMPACTS TO THE MANITOBA ECONOMY

TOTAL MANITOBA ECONOMIC IMPACT ESTIMATES

(\$Millions)

	FRUIT & VEGETABLE PRODUCTION	SOD PRODUCTION	OTHER NURSERY PRODUCTS	GREENHOUSE PRODUCTS	HORTICULTURE TOTAL IMPACTS
Estimated Production Area	5,032 Acres	2,887 Acres	1,566 Acres	3.18 Million square feet	
Annual Value of Production	30.2	6.3	24.6	36.6	97.7
Total Operating Expenditures	23.7	3.8	21.6	30.2	79.3
Direct Labour Cost	10.1	1.4	8.9	12.7	33.1
Non-Labour Costs	13.6	2.5	12.7	17.5	46.2
Direct Manitoba Supply	17.8	2.6	15.9	22.2	58.5
Gross Expenditure	28.3	4.1	25.9	35.1	93.5
GDP at Market Price	24.6	4.2	20.4	29.9	79.1
GDP at Basic Prices	22.8	3.8	19.0	27.2	72.8
Labour Income	15.3	2.2	13.9	19.8	51.2
<u>Employment (Person-Years)</u>					
On-Farm Direct	309	32	255	324	921
Direct Suppliers	32	6	32	82	152
<u>Indirect & Induced</u>	76	11	70	95	252
Total Employment	418	49	357	501	1,325

- Notes: (1) GDP at Market Prices is the total value of goods and services produced in the Manitoba economy.
(2) GDP at Basic Prices is the total value of goods and services produced by Manitoba industries (i.e., GDP at Market Prices excluding taxes and subsidies on products).
(3) All Economic impact estimates presented are in current dollars.
(4) Employment impacts are in "Person-Years". A Person-Year is defined as equivalent to one person being fully employed for a period of one year.
(5) Figures may not add to total, due to rounding.

TOTAL MANITOBA TAX REVENUE IMPACT ESTIMATES

(\$Millions)

	FRUIT & VEGETABLE PRODUCTION	SOD PRODUCTION	OTHER NURSERY PRODUCTS	GREENHOUSE PRODUCTS	HORTICULTURE TOTAL IMPACTS
<u>Income Taxes</u>					
Individuals	0.8	0.1	0.7	1.0	2.7
Corporations	0.1	0.0	0.1	0.1	0.4
Other Direct Taxes	2.0	0.3	1.7	2.9	6.9
<u>Indirect Taxes</u>	0.3	0.0	0.2	0.4	0.9
Total Provincial Taxes	3.2	0.5	2.7	4.5	10.9
Local Taxes	0.9	0.1	0.8	1.1	2.9
<u>Federal Taxes</u>	3.3	0.5	2.9	4.6	11.3
Total Collected in Manitoba	7.5	1.1	6.4	10.1	25.1

- Notes: (1) Other Direct Taxes includes Retail Sales Tax, Fuel Tax, Tobacco Tax, Liquor and Lotteries Corporation Revenues, and Other Taxes.
(2) Indirect Taxes includes Corporations Taxes, Land Transfer Tax, and the Health and Education Levy.
(3) Tax revenue impacts are based on 2018/19 Manitoba budget estimates and 2013 income tax data.
(4) Figures may not add to total, due to rounding.

Data Source: Manitoba Bureau of Statistics
Economic Impact Assessment Model
Tax Revenue Impact Assessment Model

SUMMARY TABLE-2: MANITOBA HORTICULTURE - OUTPUT MULTIPLIERS

TOTAL MANITOBA ECONOMIC IMPACT PER DOLLAR OF PRODUCTION

(\$'S)

	FRUIT & VEGETABLE PRODUCTION	SOD PRODUCTION	OTHER NURSERY PRODUCTS	GREENHOUSE PRODUCTS	HORTICULTURE TOTAL IMPACTS
Estimated Production Area	5,032 Acres	2,887 Acres	1,566 Acres	3.18 Million square feet	
Annual Value of Production	1.000	1.000	1.000	1.000	1.000
Total Operating Expenditures	0.783	0.605	0.879	0.826	0.812
Direct Labour Cost	0.333	0.218	0.363	0.348	0.339
Non-Labour Costs	0.450	0.386	0.516	0.478	0.473
Direct Manitoba Supply	0.589	0.408	0.647	0.608	0.599
Gross Expenditure	0.939	0.650	1.053	0.961	0.957
GDP at Market Price	0.814	0.662	0.830	0.818	0.810
GDP at Basic Prices	0.755	0.604	0.772	0.745	0.746
Labour Income	0.506	0.340	0.566	0.542	0.524
Employment (Person-Years)	Person-Years per \$1.0 million of Production				
On-Farm Direct	10.2	5.0	10.4	8.9	9.4
Direct Suppliers	1.1	1.0	1.3	2.2	1.6
<u>Indirect & Induced</u>	2.5	1.7	2.9	2.6	2.6
Total Employment	13.8	7.7	14.5	13.7	13.6

- Notes: (1) GDP at Market Prices is the total value of goods and services produced in the Manitoba economy.
(2) GDP at Basic Prices is the total value of goods and services produced by Manitoba industries (i.e., GDP at Market Prices excluding taxes and subsidies on products).
(3) All Economic impact estimates presented are in current dollars.
(4) Employment impacts are in "Person-Years". A Person-Year is defined as equivalent to one person being fully employed for a period of one year.
(5) Figures may not add to total, due to rounding.

TOTAL MANITOBA TAX REVENUE PER DOLLAR OF PRODUCTION

(\$'S)

	FRUIT & VEGETABLE PRODUCTION	SOD PRODUCTION	OTHER NURSERY PRODUCTS	GREENHOUSE PRODUCTS	HORTICULTURE TOTAL IMPACTS
<u>Income Taxes</u>					
Individuals	0.026	0.020	0.030	0.028	0.028
Corporations	0.004	0.004	0.004	0.004	0.004
Other Direct Taxes	0.067	0.047	0.068	0.080	0.071
<u>Indirect Taxes</u>	0.010	0.007	0.010	0.010	0.010
Total Provincial Taxes	0.106	0.078	0.111	0.122	0.112
Local Taxes	0.030	0.020	0.031	0.030	0.030
<u>Federal Taxes</u>	0.111	0.083	0.117	0.126	0.116
Total Collected in Manitoba	0.247	0.181	0.260	0.277	0.257

- Notes: (1) Other Direct Taxes includes Retail Sales Tax, Fuel Tax, Tobacco Tax, Liquor and Lotteries Corporation Revenues, and Other Taxes.
(2) Indirect Taxes includes Corporations Taxes, Land Transfer Tax, and the Health and Education Levy.
(3) Tax revenue impacts are based on 2018/19 Manitoba budget estimates and 2013 income tax data.
(4) Figures may not add to total, due to rounding.

Data Source: Manitoba Bureau of Statistics
Economic Impact Assessment Model
Tax Revenue Impact Assessment Model

SUMMARY TABLE-3: MANITOBA HORTICULTURE - EXPENDITURE MULTIPLIERS

TOTAL MANITOBA ECONOMIC IMPACT PER DOLLAR OF OPERATING EXPENDITURE

(\$'S)

	FRUIT & VEGETABLE PRODUCTION	SOD PRODUCTION	OTHER NURSERY PRODUCTS	GREENHOUSE PRODUCTS	HORTICULTURE TOTAL IMPACTS
Estimated Production Area	5,032 Acres	2,887 Acres	1,566 Acres	3.18 Million square feet	
Annual Value of Production	1.277	1.654	1.138	1.211	1.232
Total Operating Expenditure	1.000	1.000	1.000	1.000	1.000
Direct Labour Cost	0.426	0.361	0.413	0.421	0.417
Non-Labour Costs	0.574	0.639	0.587	0.579	0.583
Direct Manitoba Supply	0.752	0.674	0.736	0.736	0.738
Gross Expenditure	1.199	1.074	1.198	1.163	1.179
GDP at Market Price	1.039	1.095	0.944	0.991	0.997
GDP at Basic Prices	0.964	0.999	0.878	0.902	0.918
Labour Income	0.646	0.562	0.644	0.656	0.645
Employment (Person-Years)	Person-Years per \$1.0 million of Expenditure				
On-Farm Direct	13.1	8.3	11.8	10.7	11.6
Direct Suppliers	1.4	1.6	1.5	2.7	1.9
<u>Indirect & Induced</u>	3.2	2.9	3.3	3.1	3.2
Total Employment	17.7	12.8	16.5	16.6	16.7

- Notes: (1) GDP at Market Prices is the total value of goods and services produced in the Manitoba economy.
(2) GDP at Basic Prices is the total value of goods and services produced by Manitoba industries (i.e., GDP at Market Prices excluding taxes and subsidies on products).
(3) All Economic impact estimates presented are in current dollars.
(4) Employment impacts are in "Person-Years". A Person-Year is defined as equivalent to one person being fully employed for a period of one year.
(5) Figures may not add to total, due to rounding.

TOTAL MANITOBA TAX REVENUE PER DOLLAR OF OPERATING EXPENDITURE

(\$'S)

	FRUIT & VEGETABLE PRODUCTION	SOD PRODUCTION	OTHER NURSERY PRODUCTS	GREENHOUSE PRODUCTS	HORTICULTURE TOTAL IMPACTS
<u>Income Taxes</u>					
Individuals	0.033	0.033	0.034	0.034	0.034
Corporations	0.005	0.006	0.004	0.005	0.005
Other Direct Taxes	0.085	0.078	0.077	0.096	0.087
<u>Indirect Taxes</u>	0.012	0.012	0.012	0.012	0.012
Total Provincial Taxes	0.136	0.129	0.127	0.147	0.137
Local Taxes	0.038	0.034	0.035	0.036	0.037
<u>Federal Taxes</u>	0.141	0.137	0.133	0.152	0.143
Total Collected in Manitoba	0.315	0.299	0.295	0.336	0.317

- Notes: (1) Other Direct Taxes includes Retail Sales Tax, Fuel Tax, Tobacco Tax, Liquor and Lotteries Corporation Revenues, and Other Taxes.
(2) Indirect Taxes includes Corporations Taxes, Land Transfer Tax, and the Health and Education Levy.
(3) Tax revenue impacts are based on 2018/19 Manitoba budget estimates and 2013 income tax data.
(4) Figures may not add to total, due to rounding.

Data Source: Manitoba Bureau of Statistics
Economic Impact Assessment Model
Tax Revenue Impact Assessment Model

SUMMARY TABLE-4: MANITOBA HORTICULTURE - LAND USE MULTIPLIERS

TOTAL MANITOBA ECONOMIC IMPACT PER ACRE OF PRODUCTION & 1,000 SQ.FT. GREENHOUSE (\$000'S)

	FRUIT & VEGETABLE PRODUCTION	SOD PRODUCTION	OTHER NURSERY PRODUCTS	GREENHOUSE PRODUCTS
Standardized Production Area	1 Acre	1 Acre	1 Acre	1,000 Square Feet
Annual Value of Production	6.00	2.20	15.70	11.50
Total Operating Expenditures	4.70	1.33	13.80	9.50
Direct Labour Cost	2.00	0.48	5.70	4.00
Non-Labour Costs	2.70	0.85	8.10	5.50
Direct Manitoba Supply	3.53	0.90	10.15	7.00
Gross Expenditure	5.63	1.43	16.53	11.05
GDP at Market Price	4.88	1.46	13.03	9.41
GDP at Basic Prices	4.53	1.33	12.11	8.57
Labour Income	3.04	0.75	8.89	6.23
<u>Employment (Person-Years) pe</u>	100 Acres	100 Acres	100 Acres	100,000 Square Feet
On-Farm Direct	6.14	1.10	16.3	10.2
Direct Suppliers	0.64	0.22	2.0	2.6
<u>Indirect & Induced</u>	1.52	0.38	4.5	3.0
Total Employment	8.30	1.70	22.8	15.8

- Notes: (1) GDP at Market Prices is the total value of goods and services produced in the Manitoba economy.
(2) GDP at Basic Prices is the total value of goods and services produced by Manitoba industries (i.e., GDP at Market Prices excluding taxes and subsidies on products).
(3) All Economic impact estimates presented are in current dollars.
(4) Employment impacts are in "Person-Years". A Person-Year is defined as equivalent to one person being fully employed for a period of one year.
(5) Figures may not add to total, due to rounding.

TOTAL MANITOBA TAX REVENUE PER ACRE OF PRODUCTION & 1,000 SQ.FT. GREENHOUSE (\$000'S)

	FRUIT & VEGETABLE PRODUCTION	SOD PRODUCTION	OTHER NURSERY PRODUCTS	GREENHOUSE PRODUCTS
Standardized Production Area	1 Acre	1 Acre	1 Acre	1,000 Square Feet
<u>Income Taxes</u>				
Individuals	0.16	0.04	0.47	0.33
Corporations	0.02	0.01	0.06	0.04
Other Direct Taxes	0.40	0.10	1.06	0.92
<u>Indirect Taxes</u>	0.06	0.02	0.16	0.11
Total Provincial Taxes	0.64	0.17	1.75	1.40
Local Taxes	0.18	0.04	0.49	0.34
<u>Federal Taxes</u>	0.66	0.18	1.84	1.44
Total Collected in Manitoba	1.48	0.40	4.08	3.19

- Notes: (1) Other Direct Taxes includes Retail Sales Tax, Fuel Tax, Tobacco Tax, Liquor and Lotteries Corporation Revenues, and Other Taxes.
(2) Indirect Taxes includes Corporations Taxes, Land Transfer Tax, and the Health and Education Levy.
(3) Tax revenue impacts are based on 2018/19 Manitoba budget estimates and 2013 income tax data.
(4) Figures may not add to total, due to rounding.

Data Source: Manitoba Bureau of Statistics
Economic Impact Assessment Model
Tax Revenue Impact Assessment Model

FRUIT & VEGETABLE PRODUCTION: MANITOBA IMPACTS & MULTIPLIERS

TOTAL MANITOBA ECONOMIC IMPACT ESTIMATES

(\$Millions)

	CURRENT PRODUCTION IMPACTS	IMPACTS PER \$1.0 MILLION OF PRODUCTION	IMPACTS PER \$1.0 MILLION OF EXPENDITURE	IMPACTS PER 1,000 ACRES OF PRODUCTION
Estimated Production Area	5,032 Acres			1,000 Acres
Annual Value of Production	30.2	1.00	1.28	6.00
Total Operating Expenditures	23.7	0.78	1.00	4.70
Direct Labour Cost	10.1	0.33	0.43	2.00
Non-Labour Costs	13.6	0.45	0.57	2.70
Direct Manitoba Supply	17.8	0.59	0.75	3.53
Gross Expenditure	28.3	0.94	1.20	5.63
GDP at Market Price	24.6	0.81	1.04	4.88
GDP at Basic Prices	22.8	0.75	0.96	4.53
Labour Income	15.3	0.51	0.65	3.04
<u>Employment (Person-Years)</u>				
On-Farm Direct	309	10.2	13.1	61.4
Direct Suppliers	32	1.1	1.4	6.4
Indirect & Induced	76	2.5	3.2	15.2
Total Employment	418	13.8	17.7	83.0

- Notes: (1) GDP at Market Prices is the total value of goods and services produced in the Manitoba economy.
(2) GDP at Basic Prices is the total value of goods and services produced by Manitoba industries (i.e., GDP at Market Prices excluding taxes and subsidies on products).
(3) All Economic impact estimates presented are in current dollars.
(4) Employment impacts are presented in terms of "Person-Years". A Person-Year is defined as one person being fully employed for a period of one year.
(5) Figures may not add to total, due to rounding.

TOTAL MANITOBA TAX REVENUE IMPACT ESTIMATES

(\$Millions)

	CURRENT PRODUCTION IMPACTS	IMPACTS PER \$1.0 MILLION OF PRODUCTION	IMPACTS PER \$1.0 MILLION OF EXPENDITURE	IMPACTS PER 1,000 ACRES OF PRODUCTION
<u>Income Taxes</u>				
Individuals	0.79	0.03	0.03	0.16
Corporations	0.12	0.00	0.00	0.02
Other Direct Taxes	2.02	0.07	0.09	0.40
Indirect Taxes	0.29	0.01	0.01	0.06
Total Provincial Taxes	3.21	0.11	0.14	0.64
Local Taxes	0.91	0.03	0.04	0.18
Federal Taxes	3.34	0.11	0.14	0.66
Total Collected in Manitoba	7.46	0.25	0.32	1.48

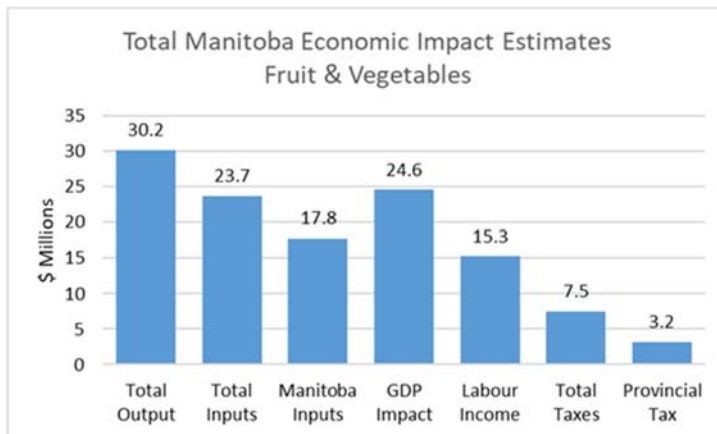
- Notes: (1) Other Direct Taxes includes Retail Sales Tax, Fuel Tax, Tobacco Tax, Liquor and Lotteries Corporation Revenues, and Other Taxes.
(2) Indirect Taxes includes Corporations Taxes, Land Transfer Tax, and the Health and Education Levy.
(3) Tax revenue impacts are based on 2018/19 Manitoba budget estimates and 2013 income tax data.
(4) Figures may not add to total, due to rounding.

Data Source: Manitoba Bureau of Statistics
Economic Impact Assessment Model
Tax Revenue Impact Assessment Model

Fruit & Vegetable Production Impact Estimates:

Total annual field production of fruit and vegetables in Manitoba is estimated at \$30.2 million. This is based on average value of output of \$6,000 per acre, and 5,032 acres planted. Corresponding operating inputs for fruit and vegetable production, estimated at \$4,700 per acre, amount to \$23.7 million.

Given the specific mix of goods and services used in fruit and vegetable production, as revealed by responses to the MBS horticultural survey, 75% of direct operating needs are expected to be directly supplied by Manitoba based industry, resulting in a Direct Manitoba Supply estimate of \$17.8 million.



Production and delivery of this \$17.8 million in directly supplied goods and services is estimated to lever \$10.5 million in additional Manitoba based expenditures, resulting in Gross Manitoba Expenditures of \$28.3 million. This is the gross monetary impact to the provincial economy.

This gross expenditures statistic contains double-counting of the same dollars being spent and respent in a chain of transactions. Measures of Gross Domestic Product (GDP) are designed to remove this double-counting by summing only the unduplicated value added at each transactions point, thus providing an estimate of the net monetary impact to the provincial economy.

The total impact of in scope fruit and vegetable production to provincial GDP at Market Prices is estimated at \$24.6 million. Therefore, for each \$1.00 of total horticultural output, the GDP impact is estimated at \$0.81, and for each \$1.00 of horticultural input costs, the GDP impact is estimated at \$1.04.

The largest component of GDP is typically labour income. The total impact to Manitoba labour income resulting from fruit and vegetable production sums to \$15.3 million. Therefore, for each \$1.00 of total output, Manitoba labour income is \$0.51, and for each \$1.00 of input costs, labour income is estimated at \$0.65. On a land use basis, the total Manitoba labour income impact is \$3,000 per acre of fruit and vegetable production.

The \$15.3 million total labour income estimate consists of \$10.1 million in direct on-farm labour costs, plus \$5.2 million in spin-off labour income (estimated by the MBS Economic Impact Assessment Model).

Over 400 full-time equivalent (FTE) jobs, are supported by the labour income generated. This total includes over 300 FTE on-farm jobs, about 30 FTE jobs among direct suppliers to fruit and vegetable operations, and 75 indirect and induced jobs.

- For each \$1.0 million in output, 13.8 person-years of employment in Manitoba are sustained, including 10.2 person-years of on-farm employment.
- For each \$1.0 million in operating expenditures, total employment is estimated at 17.7 person-years; 13.1 person-years of on-farm employment and 4.6 person-years of spin-off employment.

Total taxes collected in Manitoba by the three levels of government are estimated at \$7.5 million per year. Total provincial tax revenue amounts to \$3.2 million annually, municipal taxes \$0.9 million, and federal taxes \$3.3 million. On a multiplier basis, total tax collections are estimated at \$0.25 for each \$1.00 in value of output, or \$0.32 for each \$1.00 in total fruit and vegetable input costs.

SOD PRODUCTION: MANITOBA IMPACTS & MULTIPLIERS

TOTAL MANITOBA ECONOMIC IMPACT ESTIMATES

(\$Millions)

	CURRENT PRODUCTION IMPACTS	IMPACTS PER \$1.0 MILLION OF PRODUCTION	IMPACTS PER \$1.0 MILLION OF EXPENDITURE	IMPACTS PER 1,000 ACRES OF PRODUCTION
Estimated Production Area	2,887 Acres			1,000 Acres
Annual Value of Production	6.3	1.00	1.65	2.20
Total Operating Expenditures	3.8	0.60	1.00	1.33
Direct Labour Cost	1.4	0.22	0.36	0.48
Non-Labour Costs	2.5	0.39	0.64	0.85
Direct Manitoba Supply	2.6	0.41	0.67	0.90
Gross Expenditure	4.1	0.65	1.07	1.43
GDP at Market Price	4.2	0.66	1.09	1.46
GDP at Basic Prices	3.8	0.60	1.00	1.33
Labour Income	2.2	0.34	0.56	0.75
<u>Employment (Person-Years)</u>				
On-Farm Direct	32	5.0	8.3	11.0
Direct Suppliers	6	1.0	1.6	2.2
<u>Indirect & Induced</u>	11	1.7	2.9	3.8
Total Employment	49	7.7	12.8	17.0

- Notes: (1) GDP at Market Prices is the total value of goods and services produced in the Manitoba economy.
(2) GDP at Basic Prices is the total value of goods and services produced by Manitoba industries (i.e., GDP at Market Prices excluding taxes and subsidies on products).
(3) All Economic impact estimates presented are in current dollars.
(4) Employment impacts are presented in terms of "Person-Years". A Person-Year is defined as one person being fully employed for a period of one year.
(5) Figures may not add to total, due to rounding.

TOTAL MANITOBA TAX REVENUE IMPACT ESTIMATES

(\$Millions)

	CURRENT PRODUCTION IMPACTS	IMPACTS PER \$1.0 MILLION OF PRODUCTION	IMPACTS PER \$1.0 MILLION OF EXPENDITURE	IMPACTS PER 1,000 ACRES OF PRODUCTION
<u>Income Taxes</u>				
Individuals	0.12	0.02	0.03	0.04
Corporations	0.02	0.00	0.01	0.01
Other Direct Taxes	0.30	0.05	0.08	0.10
<u>Indirect Taxes</u>	0.05	0.01	0.01	0.02
Total Provincial Taxes	0.49	0.08	0.13	0.17
Local Taxes	0.13	0.02	0.03	0.04
<u>Federal Taxes</u>	0.53	0.08	0.14	0.18
Total Collected in Manitoba	1.15	0.18	0.30	0.40

- Notes: (1) Other Direct Taxes includes Retail Sales Tax, Fuel Tax, Tobacco Tax, Liquor and Lotteries Corporation Revenues, and Other Taxes.
(2) Indirect Taxes includes Corporations Taxes, Land Transfer Tax, and the Health and Education Levy.
(3) Tax revenue impacts are based on 2018/19 Manitoba budget estimates and 2013 income tax data.
(4) Figures may not add to total, due to rounding.

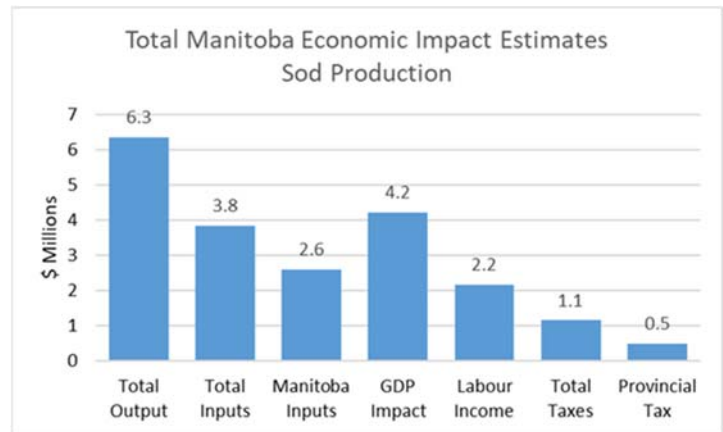
Data Source: Manitoba Bureau of Statistics
Economic Impact Assessment Model
Tax Revenue Impact Assessment Model

Sod Production Impact Estimates:

Total value of sod cultivated for sale in Manitoba is estimated at \$6.3 million per year. This is based on average output of \$2,200 per acre, and 2,887 acres annual production. Corresponding operating input costs amount to \$3.8 million per year, based on the MBS survey estimate of \$1,330 per acre.

Given the specific inputs used in sod production, 67% of direct operating expenditures are expected to be directly supplied by Manitoba based industry, resulting in a Direct Manitoba Supply estimate of \$2.6 million.

Production and delivery of \$2.6 million in goods and services in direct support of sod production is estimated to lever \$1.5 million in additional Manitoba based expenditures, resulting in Gross Manitoba Expenditures of \$4.1 million. This is the gross monetary impact to the economy.



The net monetary impact to Manitoba, as measured by GDP at Market Prices, is \$4.2 million annually. For each \$1.00 of sod production, the GDP impact is estimated at \$0.66, and for each \$1.00 of sod operating inputs, GDP is estimated at \$1.09.

The total impact to Manitoba labour income (a component of GDP) resulting from sod production is estimated at \$2.2 million. Therefore, for each \$1.00 of total output, the Manitoba labour income impact is estimated at \$0.34, and for each \$1.00 of sod input costs, labour income is estimated at \$0.56. On a land use basis, the total Manitoba labour income impact is estimated at \$750 per acre of sod production.

The total Manitoba labour income estimate consists of \$1.4 million in direct sod farm labour, plus \$0.8 million in spin-off labour income estimated by the MBS Economic Impact Assessment Model.

The total Manitoba employment impact resulting from provincial sod operations is estimated at 50 full-time equivalent jobs (or person-years). This total includes an estimated 32 FTE on-farm jobs, 6 FTE jobs among direct suppliers to sod farming, and an additional 11 indirect and induced jobs.

- For each \$1.0 million in output, 7.7 person-years of employment in Manitoba are sustained, including 5.0 person-years of on-farm employment.
- For each \$1.0 million in sod production expenditures, total employment is estimated at 12.8 person-years; 8.3 person-years on-farm, and 4.5 person-years of spin-off employment.

Total taxes collected in Manitoba by the three levels of government are estimated at \$1.1 million annually. Total provincial tax revenue is estimated at \$0.5 million, municipal taxes at \$0.1 million, and federal taxes at \$0.5 million. Total tax collections amount to \$0.18 for each \$1.00 in value of output, and \$0.30 for each \$1.00 in sod production costs.

OTHER NURSERY PRODUCTS: MANITOBA IMPACTS & MULTIPLIERS

TOTAL MANITOBA ECONOMIC IMPACT ESTIMATES

(\$Millions)

	CURRENT PRODUCTION IMPACTS	IMPACTS PER \$1.0 MILLION OF PRODUCTION	IMPACTS PER \$1.0 MILLION OF EXPENDITURE	IMPACTS PER 1,000 ACRES OF PRODUCTION
Estimated Production Area	1,566 Acres			1,000 Acres
Annual Value of Production	24.6	1.00	1.14	15.70
Total Operating Expenditures	21.6	0.88	1.00	13.80
Direct Labour Cost	8.9	0.36	0.41	5.70
Non-Labour Costs	12.7	0.52	0.59	8.10
Direct Manitoba Supply	15.9	0.65	0.74	10.15
Gross Expenditure	25.9	1.05	1.20	16.53
GDP at Market Price	20.4	0.83	0.94	13.03
GDP at Basic Prices	19.0	0.77	0.88	12.11
Labour Income	13.9	0.57	0.64	8.89
Employment (Person-Years)				
On-Farm Direct	255	10.4	11.8	163.0
Direct Suppliers	32	1.3	1.5	20.2
Indirect & Induced	70	2.9	3.3	44.9
Total Employment	357	14.5	16.5	228.2

- Notes: (1) GDP at Market Prices is the total value of goods and services produced in the Manitoba economy.
(2) GDP at Basic Prices is the total value of goods and services produced by Manitoba industries (i.e., GDP at Market Prices excluding taxes and subsidies on products).
(3) All Economic impact estimates presented are in current dollars.
(4) Employment impacts are presented in terms of "Person-Years". A Person-Year is defined as one person being fully employed for a period of one year.
(5) Figures may not add to total, due to rounding.

TOTAL MANITOBA TAX REVENUE IMPACT ESTIMATES

(\$Millions)

	CURRENT PRODUCTION IMPACTS	IMPACTS PER \$1.0 MILLION OF PRODUCTION	IMPACTS PER \$1.0 MILLION OF EXPENDITURE	IMPACTS PER 1,000 ACRES OF PRODUCTION
Income Taxes				
Individuals	0.73	0.03	0.03	0.47
Corporations	0.09	0.00	0.00	0.06
Other Direct Taxes	1.66	0.07	0.08	1.06
Indirect Taxes	0.25	0.01	0.01	0.16
Total Provincial Taxes	2.74	0.11	0.13	1.75
Local Taxes	0.77	0.03	0.04	0.49
Federal Taxes	2.88	0.12	0.13	1.84
Total Collected in Manitoba	6.38	0.26	0.30	4.08

- Notes: (1) Other Direct Taxes includes Retail Sales Tax, Fuel Tax, Tobacco Tax, Liquor and Lotteries Corporation Revenues, and Other Taxes.
(2) Indirect Taxes includes Corporations Taxes, Land Transfer Tax, and the Health and Education Levy.
(3) Tax revenue impacts are based on 2018/19 Manitoba budget estimates and 2013 income tax data.
(4) Figures may not add to total, due to rounding.

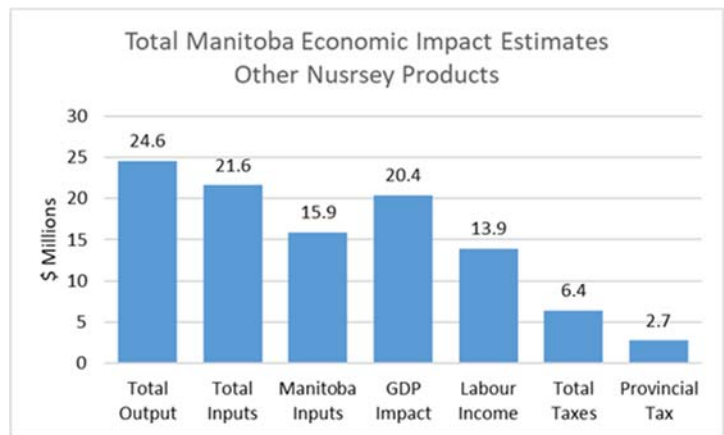
Data Source: Manitoba Bureau of Statistics
Economic Impact Assessment Model
Tax Revenue Impact Assessment Model

Other Nursery Product Impact Estimates:

Monetary value of other nursery products in Manitoba is calculated at \$24.6 million, based on average output of \$15,700 per acre, and 1,566 acres used for production. Corresponding operating inputs are \$13,800 per acre, or \$21.6 million in total.

The quantity and source of the inputs needed, results in the expectation that 74% of direct operating demand could be met by Manitoba industry, leading to a Direct Manitoba Supply estimate of \$15.9 million.

Production and delivery of \$15.9 million in goods and services in direct support of these operations is estimated to lever \$10.0 million in additional Manitoba based expenditures, resulting in Gross Manitoba Expenditures of \$25.9 million. This is the gross monetary impact to the provincial economy.



GDP estimates are designed to remove any double-counting included in the Gross Expenditures statistic. The total impact to provincial GDP at Market Prices, expected to result from other nursery product operations, is \$20.4 million. Therefore, for each \$1.00 of total output, the GDP impact is \$0.83, and for each \$1.00 of nursery product input costs, the provincial GDP impact is \$0.94.

The total impact to Manitoba labour income resulting from these operations comes to \$13.9 million. For each \$1.00 of increased production, Manitoba labour income is estimated at \$0.57, and for each \$1.00 of direct operating costs, labour income is \$0.64. On a land use basis, Manitoba labour income is estimated to amount to \$8,900 per acre of production.

The total Manitoba labour income estimate consists of \$8.9 million in direct on-farm labour costs, plus \$5.0 million in spin-off labour income estimated by the MBS Economic Impact Assessment Model.

About 360 full-time equivalent jobs are likely supported by the \$13.9 million in total labour income. This total includes 255 FTE on-farm jobs, about 30 FTE jobs among direct suppliers to nursery product growers, and 70 additional spin-off jobs.

- For each \$1.0 million in output, 14.5 person-years of employment in Manitoba are sustained, including 10.4 person-years of on-farm employment.
- For each \$1.0 million in operating expenditures, total employment is estimated at 16.5 person-years; 11.8 person-years of on-farm employment and 4.7 person-years of spin-off employment.

Total taxes collected in Manitoba by the three levels of government are estimated at \$6.4 million per year, including \$2.7 million in provincial tax revenue, \$0.8 million in municipal taxes, and \$2.9 million in federal taxes. Total tax collections amount to \$0.26 for each \$1.00 increase in output, or \$0.30 for each \$1.00 in input costs.

GREENHOUSE PRODUCTION: MANITOBA IMPACTS & MULTIPLIERS

TOTAL MANITOBA ECONOMIC IMPACT ESTIMATES

(\$Millions)

	CURRENT PRODUCTION IMPACTS	IMPACTS PER \$1.0 MILLION OF PRODUCTION	IMPACTS PER \$1.0 MILLION OF EXPENDITURE	IMPACTS PER 1,000,000 SQ.FT. OF PRODUCTION
Estimated Production Area	3.18 Million square feet			1.0 Million square feet
Annual Value of Production	36.6	1.00	1.21	11.50
Total Operating Expenditures	30.2	0.83	1.00	9.50
Direct Labour Cost	12.7	0.35	0.42	4.00
Non-Labour Costs	17.5	0.48	0.58	5.50
Direct Manitoba Supply	22.2	0.61	0.74	7.00
Gross Expenditure	35.1	0.96	1.16	11.05
GDP at Market Price	29.9	0.82	0.99	9.41
GDP at Basic Prices	27.2	0.74	0.90	8.57
Labour Income	19.8	0.54	0.66	6.23
<u>Employment (Person-Years)</u>				
On-Farm Direct	324	8.9	10.7	102.0
Direct Suppliers	82	2.2	2.7	25.8
<u>Indirect & Induced</u>	95	2.6	3.1	29.8
Total Employment	501	13.7	16.6	157.6

- Notes: (1) GDP at Market Prices is the total value of goods and services produced in the Manitoba economy.
(2) GDP at Basic Prices is the total value of goods and services produced by Manitoba industries (i.e., GDP at Market Prices excluding taxes and subsidies on products).
(3) All Economic impact estimates presented are in current dollars.
(4) Employment impacts are presented in terms of "Person-Years". A Person-Year is defined as one person being fully employed for a period of one year.
(5) Figures may not add to total, due to rounding.

TOTAL MANITOBA TAX REVENUE IMPACT ESTIMATES

(\$Millions)

	CURRENT PRODUCTION IMPACTS	IMPACTS PER \$1.0 MILLION OF PRODUCTION	IMPACTS PER \$1.0 MILLION OF EXPENDITURE	IMPACTS PER 1,000,000 SQ.FT. OF PRODUCTION
<u>Income Taxes</u>				
Individuals	1.04	0.03	0.03	0.33
Corporations	0.14	0.00	0.00	0.04
Other Direct Taxes	2.91	0.08	0.10	0.92
<u>Indirect Taxes</u>	0.36	0.01	0.01	0.11
Total Provincial Taxes	4.45	0.12	0.15	1.40
Local Taxes	1.09	0.03	0.04	0.34
<u>Federal Taxes</u>	4.59	0.13	0.15	1.44
Total Collected in Manitoba	10.14	0.28	0.34	3.19

- Notes: (1) Other Direct Taxes includes Retail Sales Tax, Fuel Tax, Tobacco Tax, Liquor and Lotteries Corporation Revenues, and Other Taxes.
(2) Indirect Taxes includes Corporations Taxes, Land Transfer Tax, and the Health and Education Levy.
(3) Tax revenue impacts are based on 2018/19 Manitoba budget estimates and 2013 income tax data.
(4) Figures may not add to total, due to rounding.

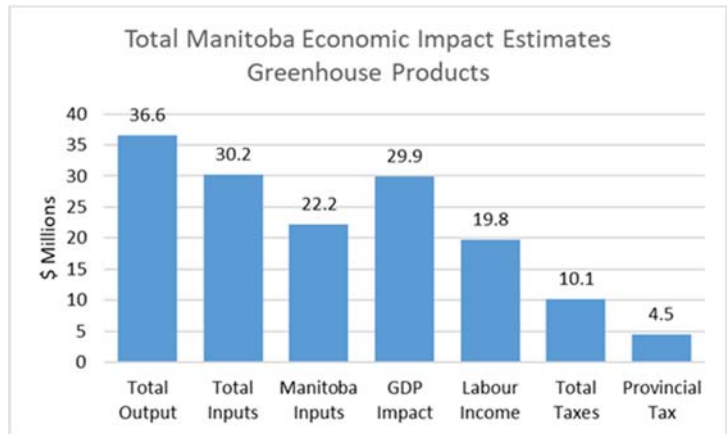
Data Source: Manitoba Bureau of Statistics
Economic Impact Assessment Model
Tax Revenue Impact Assessment Model

Greenhouse Product Impact Estimates:

Total annual value of greenhouse production in Manitoba is estimated at \$36.6 million. This is based on average production of \$11.50/ft², and 3.18 million square feet of greenhouse area. Greenhouse operating inputs, estimated at \$9.50/ft², amount to \$30.2 million.

Given the specific mix of goods and services used by provincial greenhouse operations, 74% of direct operating expenditures are expected to be directly supplied by Manitoba based industry, resulting in Direct Manitoba Supply valued at \$22.2 million.

This direct industry response is estimated to produce \$12.9 million in additional Manitoba based expenditures, resulting in Gross Manitoba Expenditures of \$35.1 million; the gross monetary impact to the provincial economy.



The net monetary impact, as measured by GDP at Market Prices, is estimated at \$29.9 million. Therefore, for each \$1.00 of greenhouse output, GDP is estimated at \$0.82, and for each \$1.00 of greenhouse operating inputs, GDP is estimated at \$0.99.

The total impact to Manitoba labour income resulting from Manitoba greenhouse operations comes to \$19.8 million. For each \$1.00 of output, Manitoba labour income is estimated at \$0.54, and for each \$1.00 of input costs, labour income is \$0.66. On an area basis, total Manitoba labour income comes to \$6.23/ft².

Total Manitoba labour income consists of \$12.7 million in direct greenhouse labour costs, plus \$7.1 million in spin-off labour income (estimated by the MBS Economic Impact Assessment Model).

MBS estimates 500 full-time equivalent jobs to be supported by this level of labour income. This includes about 325 FTE greenhouse jobs, 80 FTE jobs among direct suppliers to greenhouse operations, and 95 additional spin-off jobs.

- For each \$1.0 million in output, 13.7 person-years of employment in Manitoba are sustained, including 8.9 person-years of direct greenhouse employment.
- For each \$1.0 million in operating expenditures, total employment is estimated at 16.6 person-years; 10.7 person-years of direct greenhouse employment and 5.9 person-years of spin-off employment.

Total taxes collected in Manitoba by the three levels of government are estimated at \$10.1 million per year. This includes total provincial tax revenue of \$4.5 million, municipal taxes of \$1.1 million, and \$4.6 million in federal taxes. Total tax collections amount to \$0.28 for each \$1.00 in value of production, or \$0.34 for each \$1.00 in greenhouse input costs.

APPENDIX A:

MBS Economic Impact Assessment Models

& Glossary of Terms

MBS ECONOMIC & TAX REVENUE IMPACT ASSESSMENT MODELS:

Manitoba economic impact estimates have been produced using the MBS Economic Impact Assessment Model. The MBS model is based on Statistics Canada's Input-Output Tables for Manitoba. These tables contain detailed information on the inter-industry flow of goods and services within the economy of Manitoba. The current model tracks the production and use of 486 commodities (i.e., goods and services) by 235 industries and 170 final demand categories (e.g., personal consumption, capital investment, inter-provincial or international trade, etc.).

Within the model any direct change in demand, such as for farm operations, has three levels of impact; Direct Industry effects, Indirect Industry effects and Induced effects.

- 1) **Direct effects** refers to the impact on firms expected to expand/reduce production in response to a direct change in demand. Positive or negative changes in production outputs are assumed to require corresponding changes to production inputs from suppliers – the indirectly effected industries.
- 2) **Indirect effects** are therefore the ripple effect expected to occur from directly impacted firms placing increased/decreased demands on their suppliers.
- 3) **Induced effects** are the result of consumer spending in the economy, which is a function of available labour income. Available labour income is scaled up or down with the level of direct and indirect production. The induced effect is also referred to as the "household" or "consumer" effect.

Total Manitoba economic impacts are the sum of the above impacts estimated by the model, plus Direct Project Impacts, consisting of the direct contributions to Gross Domestic Product (GDP), Labour Income and Employment contained within the Direct Project Expenditures.

It should be noted that the level of direct expenditures in Manitoba limits the magnitude of Manitoba economic impacts. Expenditures made directly to suppliers outside Manitoba are generally excluded from the analysis, as production of goods and services sourced directly from outside Manitoba have no multiplying effect on the Manitoba economy.

Input-Output models, such as the MBS Economic Impact Assessment Model can be a useful component in the decision making process. However they do have certain limitations:

- 1) **The model is Static:** It is based on technologies and business practices at a fixed point in time, including where increased commodity demand will be procured (Manitoba/Non-Manitoba) and with no provision for the effects of supply and demand on prices.
- 2) **The Model is Linear:** It assumes a 10% increase in output from some industry, would require 10% greater expenditure on all inputs, and result in a 10% increase to direct labour costs, employment and profits. Therefore, it assumes production capacity is always at 100%, and changes in demand fuel immediate response. Moreover, the model assumes infinite production capacity – that industries are able to respond to increased demand without need to add infrastructure.
- 3) **The Model is based on Averages:** Depending on what data is available, construction of a school, shopping mall or large office tower may all be treated the same; as average non-residential building projects. In reality, few projects are average. However, analysis can be refined by inputting the value of each commodity used in the construction of these different projects. Still, the model is based on averages for the provincial economy in terms of expected source of each commodity (i.e., Manitoba/non-Manitoba), average transportation, wholesale and retail mark-ups, average wage rates for different industries etc.

Given sufficient information about a project, MBS is able to compensate for various model limitations. However, while data inputs, commodity supply ratios, wage rates and other adjustments can be effectively applied, there is never perfect knowledge. **As a result, the model cannot provide a complete or absolute measure of the impact of economic change. The resultant impacts should always be treated as general estimates only and never as absolutes.**

Provincial, Local and Federal tax estimates have been produced using the MBS Tax Revenue Impact Assessment Model. The MBS tax model's structure is based on 2018-19 Manitoba Budget data, 2013 Income Tax data, and MBS's 2018 Provincial Economic Accounts estimates.

The MBS Tax Revenue Impact Assessment Model utilizes output from the MBS Economic Impact Assessment Model, such as the impacts to GDP, Labour Income, Employment, and average wage rates for direct and spin-off jobs.

Federal and local taxes accruing in Manitoba are estimated in part by utilizing their average relationships to Manitoba provincial taxes. **As with the economic impacts, tax revenue impacts should be treated as general estimates only. Also, of the three tax estimates, local tax revenue carries the highest level of uncertainty.**

GLOSSARY OF TERMS:

DIRECT EXPENDITURE IMPACTS

Direct Expenditure Impacts are economic impacts that are inherent in the direct expenditures associated with the project or activity being assessed, such as the identified labour content of the project, which contributes to Employment, Labour Income and GDP impacts. Direct Expenditure Impacts are not estimated by the MBS model; they exist external to the model.

DIRECT INDUSTRY IMPACTS

Direct Industry Impacts are derived from the Direct Suppliers to the Project. In working to supply the various goods and services required for the project, directly impacted firms generate revenue, pay out wages and place additional demands on their own suppliers.

INDIRECT INDUSTRY IMPACTS

Indirect Impacts are the second level of economic impacts resulting from Project Expenditures. Indirect Impacts result when Directly Impacted firms require additional inputs from other firms in order to meet the demands of the Project, or to "restock shelves" in preparation for future demands.

INDUCED IMPACTS

Induced Impacts are the "Consumer" or "Household" effects, which occur as a result of wage re-spending. It is assumed that most of the Labour Income in the Direct Expenditures and resulting Industry Impacts are spent on consumable or household items. This is the third level of economic activity resulting from Direct Project Expenditures.

TOTAL IMPACTS

Total Impacts are the sum of Total Direct Impacts, Indirect Industry Impacts and Induced Impacts.

TOTAL EXPENDITURES

Refers to the Total Expenditures specified for the project or activity being assessed (such as Operations or Construction). Total Expenditures are the initial expenditures from which all other economic impacts ultimately result (be they in Manitoba, the Rest-of-Canada or the Rest-of-the-World).

DIRECT MANITOBA EXPENDITURES

Direct Manitoba Expenditures identifies the volume of Total Expenditures estimated to be spent directly in Manitoba. Only Expenditures in Manitoba can impact Manitoba GDP, Labour Income and Employment etc. Direct Expenditures outside of Manitoba are a direct leakage from the economy, and do not impact Manitoba GDP, Labour Income or Employment levels.

DIRECT MANITOBA SUPPLY

The value of Direct Manitoba Expenditures estimated to be produced by Manitoba industry. To yield high impacts relative to direct expenditures, the direct supply should approach the value of direct expenditures. A relatively small direct supply value results in lesser impacts to the economy. The MBS model has estimates of the Manitoba Supply Ratio for each commodity contained in the Model. These can be adjusted if necessary.

GROSS EXPENDITURES

Additional expenditures by businesses and persons are levered by the Direct Expenditures. The Gross Expenditures statistic provides a measure of these expenditures, which includes re-spending of the initial direct expenditures by suppliers and wage earners. It represents the gross monetary benefit to the economy.

GDP AT MARKET PRICES

A measure of the total value of goods and services produced in the economy, GDP at Market Prices is the net monetary benefit to the economy. This statistic removes the double counting of expenditures and expenditure leakages from the economy, which are included in the Gross Expenditures statistic.

GDP AT BASIC PRICES

A measure of the total value of goods and services produced by industry. GDP at Basic Prices is equal to GDP at Market Prices minus Net Taxes and Subsidies on Products.

LABOUR INCOME

The sum of all Wages, Salaries, Supplementary Labour Income and Net Income of Unincorporated Businesses. Any or all of these may be present in the Direct Expenditures and resultant Direct, Indirect and Induced Impacts.

EMPLOYMENT

The Employment estimated to result from the above Labour Income. Jobs are presented as "full-time equivalent person-years" (i.e. one job represents the equivalent of one person being employed on a full-time basis for a period of one-year).

FEDERAL TAXES

The sum of Federal Income Taxes (Corporate and Personal), Other Direct Federal Taxes and Indirect Federal Taxes, estimated to be collected in Manitoba.

PROVINCIAL TAXES

The sum of Provincial Income Taxes (Corporate and Personal), Other Direct Provincial Taxes and Indirect Provincial Taxes, estimated to be collected in Manitoba.

LOCAL TAXES

An estimate of the total taxes, of any description, accruing to all Local Municipalities in Manitoba as a result of the project or activity being assessed and its spin-off activities.

APPENDIX B:

MBS Horticulture Survey

MBS Horticulture Survey:

Under contract to Manitoba Agriculture, the Manitoba Bureau of Statistics (MBS) is collecting operating information from all Manitoba horticultural producers (as defined below).

Horticulture operations of interest include production of fruits, most vegetables, flowers, seeds, sod and other nursery and greenhouse products.

Agricultural operations not generally included under horticulture are potatoes grown under contract, grains, oilseeds, livestock, eggs and apiary. **Also excluded, are any goods your business may purchase directly for resale.**

Name of Business **Company Name** or **Contact Name** (please change if incorrect)

Name of Person Completing Survey _____ Position/Job title _____

E-mail Address _____ Telephone Number _____

All questions are to be answered for your last complete year of operations (fiscal or calendar year).

What is your last complete year of operations? Please select (2015/16, Jan-Dec 2016, 2016/17, Not Applicable)

Part 1 has to do with land use, and is similar to what you were asked in the 2016 Census of Agriculture.

For your last complete year of operations ("**LAST YEAR**"), please enter the approximate acres used for the following purposes.

Total Acreage should include all areas owned, leased, rented, or crop shared for use by the operation, and exclude any areas leased or rented to others.

	ACRES
Total Acreage available for use	_____
Total area of vegetables, fruits, berries and nuts	_____
Total area of sod under cultivation for sale	_____
Total area of nursery products	_____
Total area of Christmas trees grown for sale	_____
All other land used for any other purpose	_____

In addition, if you had greenhouses, what is the total square footage of greenhouses in use in "**LAST YEAR**"?
_____ (square feet)

Part 2 deals with income and expenditures.

We are specifically interested in collecting information on the horticultural aspects of your business (production and marketing of own production).

In calculating these amounts, you may find it useful to fill in the right-hand "total operations" column, and then determine the proportion for horticultural production and sales.

Note, if running a landscape business or garden centre, please do not include any revenue or expenditures for retail operations or other services you may offer (just revenue and expenditures related to production and sales of your own fruits, vegetables, other nursery products, etc.)

	From Horticultural Production (required)	Total Operations (optional)
What were your Total Sales for "LAST YEAR"?	\$_____	\$_____

	Horticultural Operations	Total Operations
What were your Total Labour Costs "LAST YEAR"?	\$_____	\$_____

Please include all direct wage payments and benefit costs for principle owners, paid family members, and all paid workers whether full-time, part-time, seasonal or temporary.

If applicable to your operation, Total Horticultural Labour Costs (Amount from above) may include costs incurred for housing and otherwise caring for farm workers, especially foreign workers.

If this applies to your operation, please indicate your costs for farm labour that would fall into the following categories

Not Applicable (Check box)

Shelter \$_____ Included above YES NO

Transportation \$_____ Included above YES NO

Other farm worker costs \$_____ Included above YES NO

Please specify what you have included in "other farm worker costs."

The following expenditure categories are similar to those used by the Census of Agriculture. Filling in the right-hand column may help you to estimate the costs associated with the horticultural aspects of your business.

You have already specified direct labour costs of “\$\$\$\$” (and additional costs of \$\$\$\$) for your horticultural operations.

Please fill in the non-labour expenditures for your horticultural operations from “LAST YEAR”.

	Horticultural Operations (required)	Total Farm Operations (optional)
Fertilizer and other soil amendment purchases	\$ _____	\$ _____
Seed and plant purchases (excluding purchases for resale)	\$ _____	\$ _____
Custom work, contract work and hired trucking	\$ _____	\$ _____
All fuel expenses (diesel, gasoline, oil, wood, natural gas, propane, etc.)	\$ _____	\$ _____
Repairs and maintenance to farm machinery, equipment and vehicles	\$ _____	\$ _____
Repairs and maintenance to farm buildings and fences	\$ _____	\$ _____
Rental and leasing of land and buildings	\$ _____	\$ _____
Rental and leasing of farm machinery, equipment and vehicles	\$ _____	\$ _____
Electricity, telephone and all other telecommunication services	\$ _____	\$ _____
Farm interest expenses	\$ _____	\$ _____
All other expenses (excluding depreciation and capital cost allowance)	\$ _____	\$ _____

Please list the major categories that you have included in “All other expenses”.

Part 3 is to help us understand the number of full-time equivalent workers who were employed in your horticultural activities in "LAST YEAR".

You have already specified direct labour costs of "\$\$\$\$\$" (and additional costs of \$\$\$\$\$) for your horticultural operations.

Of this total, please enter the labour costs and number of positions associated with each worker category below.

	Total Labour Costs	Total Number of Positions Filled	Total Weeks Employed
Full-time year-round work (30 or more hours/week),	\$ _____	_____	x52 = _____
Part-time year-round work (under 30 hours/week),	\$ _____	_____	x52 = _____
Seasonal or Temporary workers	\$ _____	_____	_____
HORTICULTURAL TOTAL	"\$\$\$\$\$"	SUM	SUM

Of the amounts entered for Seasonal or Temporary workers how much was for workers from outside Manitoba, (whether employed under the Seasonal Agricultural Workers Program or not)?

	Total Labour Costs	Total Number of Positions Filled	Total Weeks Employed
Seasonal or Temporary workers From outside Manitoba	\$ _____	_____	_____

Thank you. The Survey is Complete.

Would you like to receive a copy of the report MBS produces for Manitoba Agriculture? **YES** **NO**

Please add any comments on your experience filling out the questionnaire. Thank you.

APPENDIX C:

Census of Agriculture Baseline Data:

Farms Producing Greenhouse and Nursery Products, Vegetables and Fruits,

2011 and 2016

Baseline Horticultural Production in Manitoba:

According to the 2016 Census of Agriculture, Manitoba had 14,791 farms, 463 (3.1%) of which reported some level of horticultural production. Manitoba farms totaled 17.6 million acres (1,192 acres on average).

The 463 farms with horticultural production totaled 270,771 acres (585 acres on average). However, horticultural production (meaning vegetables, fruits, berries and nuts, sod cultivated for sale, nursery products, and Christmas trees grown for sale) accounted for only 9,258 total acres on these 463 farms (20.0 acres on average for horticultural use).

In other words, horticultural production is a relatively small component of many of the farms that reported some level of horticulture. Vastly more land is dedicated to field crops on these 463 farms; over 85% of available acreage.

From the 2016 Census of Agriculture, of the 463 farms with horticultural production, 32.2% reported growing vegetables, 24.0% grew fruits, berries and nuts, 2.4% grew sod, 15.1% grew nursery products, and 6.5% grew Christmas trees.

In terms of land area, 1.6% of total acreage on these 463 farms was dedicated to vegetables (4,307 acres), 0.2% to fruits, berries and nuts (516 acres), 1.0% to sod cultivation (2,837 acres), 0.4% to nursery products (1,197 acres), and 0.1% to Christmas tree production (401 acres).

Comparing horticultural production trends, as indicated by changes between the 2011 and 2016 Censuses of Agriculture:

1. The number of farms reporting vegetable production is up 23.1% while vegetable acreage has declined by 8.0%.
2. Number of farms growing fruit, nuts or berries has declined 8.3% with corresponding 7.8% reduction in acreage.
3. Sod farms are reduced from 12 to 11 (-8.3%) with 3.4% reduction in sod acreage.
4. Number of farms growing nursery products have declined by 27.8% with a 38.1% reduction in acreage.
5. Christmas tree producers in the province have declined from 46 to 30 (-34.8%) with acreage reduced by more than half; 1,110 acres in 2011 compared to 401 reported in 2016 (-63.9%).

Greenhouse Statistics:

The number of farms operating greenhouses dropped by 23.4% between censuses, going from 154 establishments in 2011 to just 118 in 2016. However, total greenhouse area increased by 7.7%, (from 3.06 million square feet in 2011 to 3.30 million square feet in 2016), and the average square footage ballooned by 40.6% (from 19,867 square feet in 2011 to 27,928 square feet in 2016).

The 2016 Census of Agriculture indicated that 83.0% of greenhouse area was used for growing flowers, 10.4% was used for growing vegetables, and 6.6% for other nursery products. The comparative figures from 2011 were 89.8% for growing flowers, 6.6% for vegetables, and 3.7% for other nursery products.

Key to Symbols Used in Tables:

- x suppressed to meet the confidentiality requirements of the Statistics Act
- .. not available for a specific reference period
- ... not applicable
- 0 true zero or a value rounded to zero

Table 1: Total In Scope Farms

Farms with Horticultural Production:	MANITOBA			CANADA			MB % Share of CA	
	2011	2016	% Change	2011	2016	% Change	2011	2016
Total number of farms	542	463	-14.6%	21,021	19,808	-5.8%	2.6%	2.3%
Total farm area - Acres	300,239	270,771	-9.8%	3,202,959	3,024,628	-5.6%	9.4%	9.0%
Average acreage per Farm	554	585	5.6%	152	153	0.2%		

Source: Statistics Canada, Census of Agriculture, 2011 and 2016.

Table 2: Number of Farms by Land Use Variables

	MANITOBA			CANADA			MB % Share of CA	
	2011	2016	% Change	2011	2016	% Change	2011	2016
Vegetable	121	149	23.1%	5,391	6,334	17.5%	2.2%	2.4%
Fruits, berries and nuts	121	111	-8.3%	9,744	9,482	-2.7%	1.2%	1.2%
sod under cultivation for sale	12	11	-8.3%	333	242	-27.3%	3.6%	4.5%
Nursery products	97	70	-27.8%	3,198	2,531	-20.9%	3.0%	2.8%
Field crops	412	373	-9.5%	17,769	17,288	-2.7%	2.3%	2.2%
Summerfallow	97	81	-16.5%	1,183	1,349	14.0%	8.2%	6.0%
Tame or seeded pasture	47	38	-19.1%	2,035	1,885	-7.4%	2.3%	2.0%
Natural land for pasture	86	75	-12.8%	3,134	2,951	-5.8%	2.7%	2.5%
Woodlands and wetlands	193	168	-13.0%	9,358	8,681	-7.2%	2.1%	1.9%
Christmas trees grown for sale	46	30	-34.8%	1,884	1,527	-18.9%	2.4%	2.0%
All other land - Farms reporting	406	323	-20.4%	14,672	12,644	-13.8%	2.8%	2.6%

Source: Statistics Canada, Census of Agriculture, 2011 and 2016.

Table 3: Total Acreage by Land Use Variables

	MANITOBA			CANADA			MB % Share of CA	
	2011	2016	% Change	2011	2016	% Change	2011	2016
Vegetable	4,682	4,307	-8.0%	200,735	208,133	3.7%	2.3%	2.1%
Fruits, berries and nuts	560	516	-7.8%	290,151	310,873	7.1%	0.2%	0.2%
sod under cultivation for sale	2,936	2,837	-3.4%	61,790	55,970	-9.4%	4.8%	5.1%
Nursery products	1,934	1,197	-38.1%	58,773	48,403	-17.6%	3.3%	2.5%
Field crops	255,270	233,495	-8.5%	1,790,776	1,733,731	-3.2%	14.3%	13.5%
Summerfallow	4,060	1,761	-56.6%	26,044	21,936	-15.8%	15.6%	8.0%
Tame or seeded pasture	2,696	2,289	-15.1%	62,609	45,720	-27.0%	4.3%	5.0%
Natural land for pasture	14,907	16,383	9.9%	127,160	105,936	-16.7%	11.7%	15.5%
Woodlands and wetlands	10,822	8,432	-22.1%	901,158	825,029	-8.4%	1.2%	1.0%
Christmas trees grown for sale	1,110	401	-63.9%	63,282	55,819	-11.8%	1.8%	0.7%
All other land	11,374	8,010	-29.6%	231,930	236,457	2.0%	4.9%	3.4%

Source: Statistics Canada, Census of Agriculture, 2011 and 2016.

Table 4: Average Farm Acreage by Land Use Variables

	MANITOBA			CANADA		
	2011	2016	% Change	2011	2016	% Change
Vegetable	38.7	28.9	-25.3%	37.2	32.9	-11.8%
Fruits, berries and nuts	4.6	4.6	0.5%	29.8	32.8	10.1%
sod under cultivation for sale	244.7	257.9	5.4%	185.6	231.3	24.6%
Nursery products	19.9	17.1	-14.2%	18.4	19.1	4.1%
Field crops	619.6	626.0	1.0%	100.8	100.3	-0.5%
Summerfallow	41.9	21.7	-48.1%	22.0	16.3	-26.1%
Tame or seeded pasture	57.4	60.2	5.0%	30.8	24.3	-21.2%
Natural land for pasture	173.3	218.4	26.0%	40.6	35.9	-11.5%
Woodlands and wetlands	56.1	50.2	-10.5%	96.3	95.0	-1.3%
Christmas trees grown for sale	24.1	13.4	-44.6%	33.6	36.6	8.8%
All other land	28.0	24.8	-11.5%	15.8	18.7	18.3%

Source: Statistics Canada, Census of Agriculture, 2011 and 2016.

Table 5: Greenhouse Statistics

	MANITOBA			CANADA			MB % Share of CA	
	2011	2016	% Change	2011	2016	% Change	2011	2016
Farms reporting Greenhouses	154	118	-23.4%	4,127	3,605	-12.6%	3.7%	3.3%
Total greenhouse area (sq.ft.)	3,059,519	3,295,483	7.7%	241,898,002	262,488,032	8.5%	1.3%	1.3%
Average area (sq.ft.)	19,867	27,928	40.6%	58,614	72,812	24.2%		
Percentage of greenhouse area	100.0%	100.0%		100.0%	100.0%			
Number producing flowers	127	94	-26.0%	2,617	2,018	-22.9%	4.9%	4.7%
Area used (sq.ft.)	2,746,271	2,735,032	-0.4%	91,433,966	84,452,654	-7.6%	3.0%	3.2%
Average area (sq.ft.)	21,624	29,096	34.6%	34,938	41,850	19.8%		
Percentage of greenhouse area	89.8%	83.0%		37.8%	32.2%			
Number producing vegetables	75	44	-41.3%	1,709	1,644	-3.8%	4.4%	2.7%
Area used (sq.ft.)	200,937	341,561	70.0%	133,285,442	163,827,460	22.9%	0.2%	0.2%
Average area (sq.ft.)	2,679	7,763	189.7%	77,990	99,652	27.8%		
Percentage of greenhouse area	6.6%	10.4%		55.1%	62.4%			
Number growing other products	18	47	161.1%	694	1,015	46.3%	2.6%	4.6%
Area used (sq.ft.)	112,311	218,890	94.9%	17,178,594	14,207,918	-17.3%	0.7%	1.5%
Average area (sq.ft.)	6,240	4,657	-25.4%	24,753	13,998	-43.4%		
Percentage of greenhouse area	3.7%	6.6%		7.1%	5.4%			

Source: Statistics Canada, Census of Agriculture, 2011 and 2016.

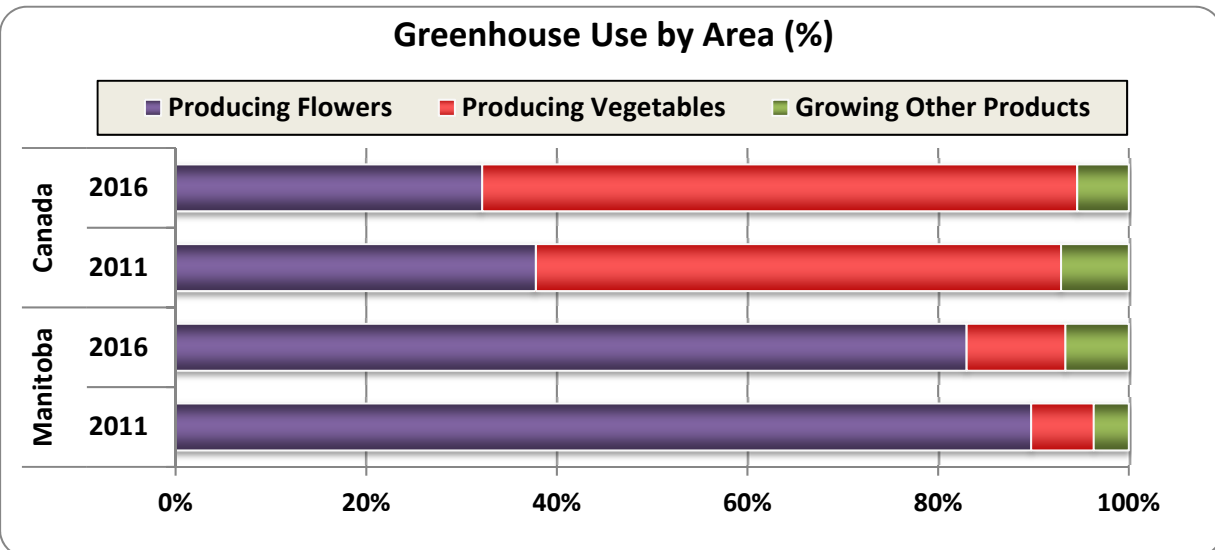
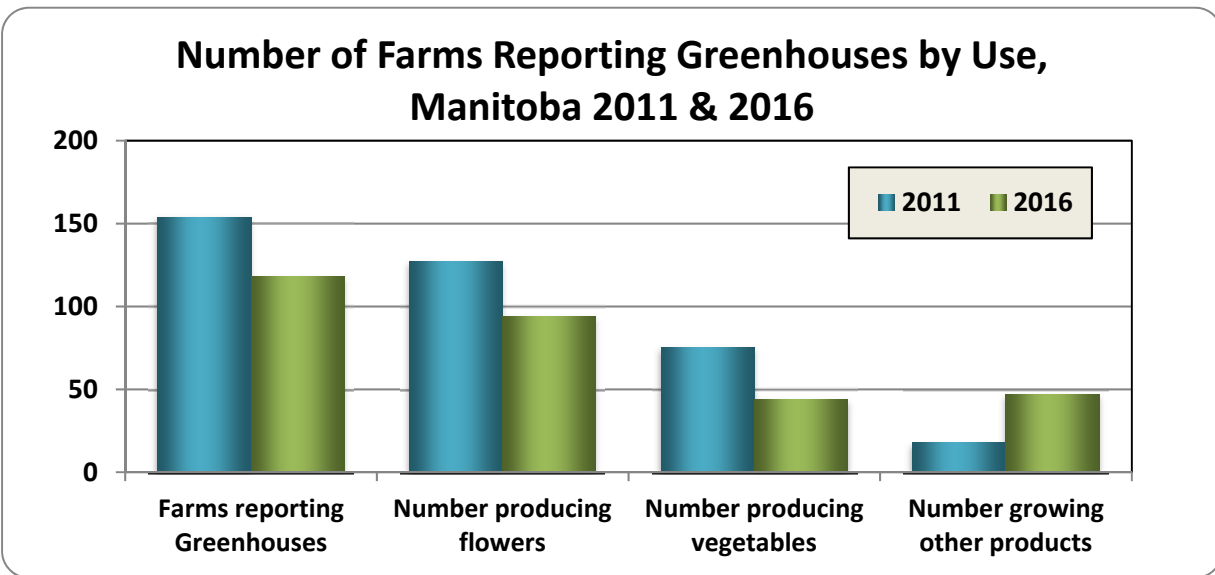


Table 6: Number of Farms Producing Specific Vegetables

	MANITOBA			CANADA			MB % Share of CA	
	2011	2016	% Change	2011	2016	% Change	2011	2016
Sweet corn	72	64	-11.1%	1,543	1,570	1.7%	4.7%	4.1%
Tomatoes	61	86	41.0%	1,995	2,592	29.9%	3.1%	3.3%
Cucumbers	51	71	39.2%	1,474	2,000	35.7%	3.5%	3.6%
Green peas	33	49	48.5%	1,040	1,412	35.8%	3.2%	3.5%
Green & wax beans	46	63	37.0%	1,546	1,885	21.9%	3.0%	3.3%
Cabbage	39	41	5.1%	998	1,373	37.6%	3.9%	3.0%
Chinese cabbage	6	11	83.3%	319	487	52.7%	1.9%	2.3%
Cauliflower	17	22	29.4%	621	862	38.8%	2.7%	2.6%
Broccoli	24	29	20.8%	787	1,057	34.3%	3.0%	2.7%
Brussels sprouts	6	12	100.0%	302	488	61.6%	2.0%	2.5%
Carrots	43	69	60.5%	1,508	2,013	33.5%	2.9%	3.4%
Rutabagas & turnips	10	18	80.0%	607	815	34.3%	1.6%	2.2%
Beets	46	64	39.1%	1,354	1,787	32.0%	3.4%	3.6%
Radishes	21	23	9.5%	564	977	73.2%	3.7%	2.4%
Shallots & green onions	26	34	30.8%	681	1,048	53.9%	3.8%	3.2%
Dry onions	48	55	14.6%	1,087	1,436	32.1%	4.4%	3.8%
Celery	11	19	72.7%	263	452	71.9%	4.2%	4.2%
Lettuce	34	41	20.6%	1,064	1,542	44.9%	3.2%	2.7%
Spinach	15	25	66.7%	639	923	44.4%	2.3%	2.7%
Peppers	36	47	30.6%	1,081	1,577	45.9%	3.3%	3.0%
Pumpkins	39	58	48.7%	1,336	1,547	15.8%	2.9%	3.7%
Squash & zucchini	40	72	80.0%	1,748	2,251	28.8%	2.3%	3.2%
Asparagus (producing)	12	19	58.3%	496	624	25.8%	2.4%	3.0%
Asparagus (non-producing)	6	11	83.3%	228	324	42.1%	2.6%	3.4%
Other vegetables	56	57	1.8%	2,271	3,127	37.7%	2.5%	1.8%

Source: Statistics Canada, Census of Agriculture, 2011 and 2016.

Table 7: Number of Farms Producing Specific Fruits, Berries and Nuts

	MANITOBA			CANADA			MB % Share of CA	
	2011	2016	% Change	2011	2016	% Change	2011	2016
Apples	14	16	14.3%	2,946	2,809	-4.7%	0.5%	0.6%
Pears	0	3	...	1,003	1,005	0.2%	0.0%	0.3%
Plums & prunes	1	5	400.0%	1,041	1,062	2.0%	0.1%	0.5%
Cherries (sweet)	1	2	100.0%	1,199	1,124	-6.3%	0.1%	0.2%
Cherries (sour)	7	19	171.4%	338	382	13.0%	2.1%	5.0%
Peaches	0	0	...	862	802	-7.0%	0.0%	0.0%
Apricots	0	1	...	378	377	-0.3%	0.0%	0.3%
Grapes	1	4	300.0%	1,776	1,787	0.6%	0.1%	0.2%
Strawberries	47	36	-23.4%	1,394	1,338	-4.0%	3.4%	2.7%
Raspberries	50	41	-18.0%	1,690	1,547	-8.5%	3.0%	2.7%
Cranberries	1	2	100.0%	229	243	6.1%	0.4%	0.8%
Blueberries	0	2	...	3,159	3,263	3.3%	0.0%	0.1%
Saskatoon berries	51	46	-9.8%	447	403	-9.8%	11.4%	11.4%
Other fruits, berries & nuts	12	15	25.0%	1,151	1,424	23.7%	1.0%	1.1%

Source: Statistics Canada, Census of Agriculture, 2011 and 2016.

Table 8: Total Acreage of Specific Vegetables

	MANITOBA			CANADA			MB % Share of CA	
	2011	2016	% Change	2011	2016	% Change	2011	2016
Sweet corn	697	476.2	-31.6%	36,425	29,699	-18.5%	1.9%	1.6%
Tomatoes	32	43	36.1%	15,326	15,163	-1.1%	0.2%	0.3%
Cucumbers	120	76.2	-36.3%	4,742	6,113	28.9%	2.5%	1.2%
Green peas	31	50.7	62.5%	9,726	12,055	24.0%	0.3%	0.4%
Green & wax beans	110	122.4	10.9%	13,045	12,676	-2.8%	0.8%	1.0%
Cabbage	393	210	-46.6%	9,415	9,535	1.3%	4.2%	2.2%
Chinese cabbage	18	X	...	2,932	2,952	0.7%	0.6%	...
Cauliflower	X	X	...	4,318	4,303	-0.3%
Broccoli	X	X	...	9,671	10,008	3.5%
Brussels sprouts	1	X	...	1,613	1,328	-17.6%	0.0%	...
Carrots	635	635.5	0.2%	20,438	20,214	-1.1%	3.1%	3.1%
Rutabagas & turnips	X	41	...	3,973	3,750	-5.6%	...	1.1%
Beets	21	42.4	102.9%	3,183	4,117	29.4%	0.7%	1.0%
Radishes	4	5.3	43.2%	1,928	2,175	12.8%	0.2%	0.2%
Shallots & green onions	326	246.6	-24.3%	1,995	1,770	-11.3%	16.3%	13.9%
Dry onions	589	484.9	-17.7%	13,341	13,281	-0.4%	4.4%	3.7%
Celery	X	X	...	2,046	2,195	7.3%
Lettuce	149	60.3	-59.6%	8,144	8,095	-0.6%	1.8%	0.7%
Spinach	2	12.6	600.0%	1,587	1,664	4.9%	0.1%	0.8%
Peppers	22	18.6	-15.1%	5,306	6,657	25.5%	0.4%	0.3%
Pumpkins	132	323.9	145.2%	6,617	8,228	24.4%	2.0%	3.9%
Squash & zucchini	117	419.5	257.6%	5,992	8,260	37.9%	2.0%	5.1%
Asparagus (producing)	138	70.1	-49.2%	3,433	4,128	20.2%	4.0%	1.7%
Asparagus (non-producing)	1	39.8	4322.2%	503	778	54.6%	0.2%	5.1%
Other vegetables	150	102.6	-31.8%	15,038	18,987	26.3%	1.0%	0.5%

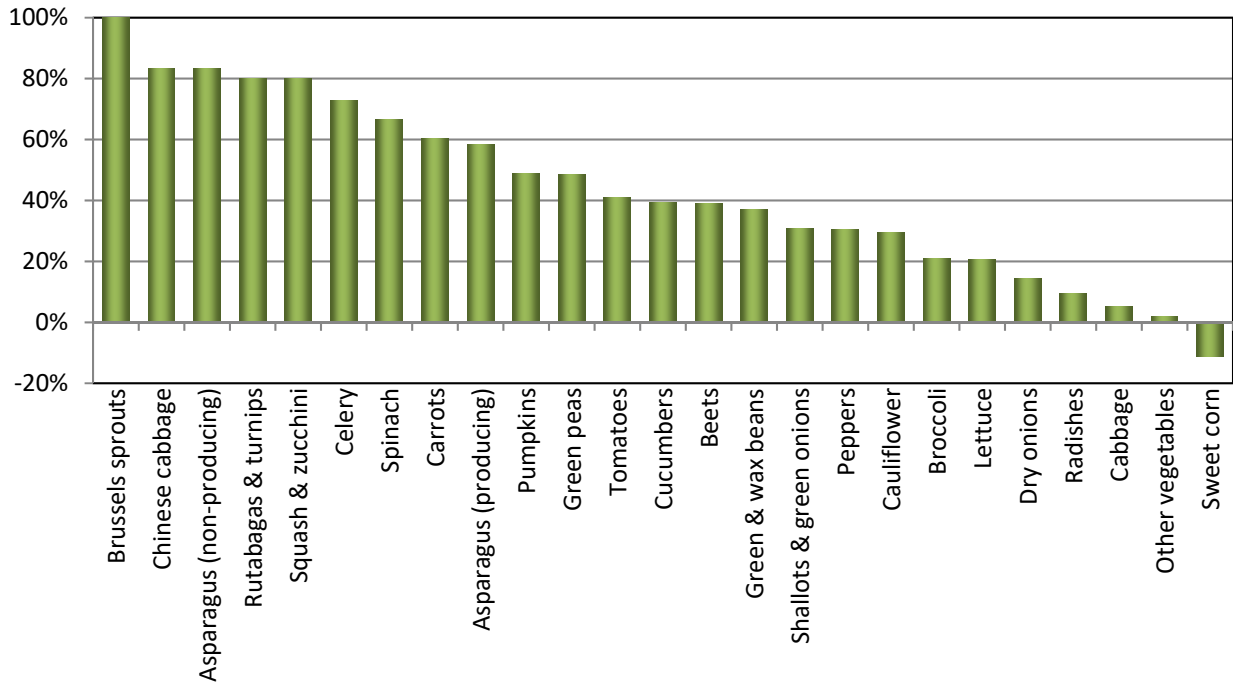
Source: Statistics Canada, Census of Agriculture, 2011 and 2016.

Table 9: Total Acreage of Specific Fruits, Berries and Nuts

	MANITOBA			CANADA			MB % Share of CA	
	2011	2016	% Change	2011	2016	% Change	2011	2016
Apples total area	15	15.9	3.2%	42,551	40,685	-4.4%	0.0%	0.0%
Pears total area	0	1.3	...	2,169	2,060	-5.0%	0.0%	0.1%
Plums and prunes	X	2	...	1,587	1,527	-3.8%	...	0.1%
Cherries (sweet)	0	X	...	4,754	5,355	12.6%	0.0%	...
Cherries (sour)	9	10.6	21.8%	2,657	2,450	-7.8%	0.3%	0.4%
Peaches	0	0	...	7,648	6,471	-15.4%	0.0%	0.0%
Apricots	0	0.1	...	316	356	12.7%	0.0%	0.0%
Grapes	X	0.6	...	29,077	30,432	4.7%	...	0.0%
Strawberries	256	245.7	-3.9%	9,112	8,589	-5.7%	2.8%	2.9%
Raspberries	64	38.6	-39.3%	6,351	4,804	-24.4%	1.0%	0.8%
Cranberries	X	0.2	...	14,578	17,634	21.0%	...	0.0%
Blueberries	0	X	...	163,238	183,621	12.5%	0.0%	...
Saskatoon berries	130	137	5.7%	1,733	1,778	2.6%	7.5%	7.7%
Other fruits, berries & nuts	82	62.1	-24.3%	4,380	5,110	16.7%	1.9%	1.2%

Source: Statistics Canada, Census of Agriculture, 2011 and 2016.

Percent Change in Number of Farms Producing Specific Vegetables in Manitoba, 2011 to 2016



Percent Change in Number of Farms Producing Specific Fruits & Berries in Manitoba, 2011 to 2016

