



# Guidelines for Estimating Potato Production Costs 2018

in Manitoba





Guidelines For Estimating  
**Irrigated Processing Potato Costs - 2018**  
Based on 780 Acres Production

Date: January, 2018

The following budgets is estimates of the cost of producing processing potatoes in Manitoba. General Manitoba Agriculture recommendations are assumed in using fertilizers and chemical inputs. These figures provide an economic evaluation of the crops and estimated yields required to cover all costs. Costs include labour, investment, depreciation, and owner management costs, but do not necessarily represent the average cost of production in Manitoba.

These budgets may be adjusted by putting in your own figures. As a producer you are encouraged to calculate your own costs of production for various crops. On each farm, costs and yields differ due to soil type, climate and

This tool is available as an Excel worksheet at: [www.manitoba.ca/agriculture](http://www.manitoba.ca/agriculture)  
or at your local [Manitoba Agriculture office](#).  
[The Farm Machinery Custom and Rental Rate](#) is also available to help  
determine machinery costs.

**Note:** This budget is only a guide and is not intended as an in depth study of the cost of production of this industry. Interpretation and use of this information is the responsibility of the user. If you need help with a budget, contact your local Manitoba Agriculture Office.

### Irrigated Processing Potato Cost of Production - 2018

	Cost / Acre	Cost /CWT (Based on Gross Yield)				Your Cost
		305 CWT	335 CWT	365 CWT	395 CWT	
<b>A. Operating Costs</b>						
1.01 Seed & cutting	\$306.00	\$1.00	\$0.91	\$0.84	\$0.77	
Seed treatment	\$79.20	\$0.26	\$0.24	\$0.22	\$0.20	
1.02 Fertilizer	\$292.71	\$0.96	\$0.87	\$0.80	\$0.74	
1.03 Herbicides	\$48.00	\$0.16	\$0.14	\$0.13	\$0.12	
1.04 Fungicide & Insecticide	\$211.51	\$0.69	\$0.63	\$0.58	\$0.54	
1.05 Fuel Costs-Field	\$56.77	\$0.20	\$0.19	\$0.18	\$0.18	
1.06 Trucking Costs	\$190.75	\$0.61	\$0.61	\$0.61	\$0.61	
1.07 Irrigation Fuel	\$56.27	\$0.18	\$0.17	\$0.15	\$0.14	
1.08 Maintenance & Repairs	\$448.42	\$1.47	\$1.34	\$1.23	\$1.14	
1.09 Custom Work & Rental	\$144.00	\$0.47	\$0.43	\$0.39	\$0.36	
1.10 Hired Labour	\$400.00	\$1.31	\$1.19	\$1.10	\$1.01	
1.11 Insurance	\$114.01	\$0.43	\$0.39	\$0.37	\$0.34	
1.12 Utilities	\$110.19	\$0.36	\$0.33	\$0.30	\$0.28	
1.13 Other Costs	<u>\$103.33</u>	<u>\$0.34</u>	<u>\$0.31</u>	<u>\$0.28</u>	<u>\$0.26</u>	
Subtotal Operating Costs	\$2,561.15	\$8.44	\$7.75	\$7.18	\$6.69	
1.14 Interest on Operating	<u>\$64.03</u>	<u>\$0.21</u>	<u>\$0.19</u>	<u>\$0.18</u>	<u>\$0.16</u>	
<b>Total Operating Costs</b>	<b>\$2,625.18</b>	<b>\$8.65</b>	<b>\$7.94</b>	<b>\$7.36</b>	<b>\$6.85</b>	
<b>B. Fixed Costs</b>						
2.01 Own Land Cost	\$168.67	\$0.55	\$0.50	\$0.46	\$0.43	
2.02 Depreciation	\$708.92	\$2.32	\$2.12	\$1.94	\$1.79	
2.03 Investment	<u>\$213.78</u>	<u>\$0.70</u>	<u>\$0.64</u>	<u>\$0.59</u>	<u>\$0.54</u>	
<b>Total Fixed Costs</b>	<b>\$1,091.36</b>	<b>\$3.57</b>	<b>\$3.26</b>	<b>\$2.99</b>	<b>\$2.76</b>	
<b>C. Labour</b>						
3.01 Own Labour	<b>\$100.00</b>	<b>\$0.33</b>	<b>\$0.30</b>	<b>\$0.27</b>	<b>\$0.25</b>	
<b>Total Cost of Production</b>	<b>\$3,816.55</b>	<b>\$12.54</b>	<b>\$11.50</b>	<b>\$10.62</b>	<b>\$9.86</b>	

### Profitability & Breakeven Analysis

<b>Estimated Farmgate</b>					
Price \$ per cwt	\$11.66	\$11.66	\$11.66	\$11.66	\$11.66
Gross Yield per acre (cwt)		305	335	365	395
Marketable Yield per acre (cwt)		259	285	310	336
<b>Gross Revenue / acre</b>		\$3,019.94	\$3,323.10	\$3,614.60	\$3,917.76
<b>Marginal Returns</b>					
Over Operating Costs		\$394.76	\$697.92	\$989.42	\$1,292.58
Over Total Costs (Net Profit)		(\$796.61)	(\$493.45)	(\$201.95)	\$101.21
<b>Operating Expense Ratio</b>		86.9%	79.0%	72.6%	67.0%
<b>Breakeven Price Per Unit</b>					
Operating Costs		\$10.14	\$9.21	\$8.47	\$7.81
<b>Total Costs</b>		\$14.74	\$13.39	\$12.31	\$11.36
<b>Breakeven Yield (Gross cwt)</b>					
Operating Costs	265				
<b>Total Costs</b>	385				
<b>Return on Assets (ROA)</b>		(0.015%)	0.813%	1.609%	2.437%
<small>(Includes estimated return from annual non-potato acres in crop rotation)</small>					

**Note:** This budget is only a guide and is not intended as an in depth study of the cost of production of this industry. Interpretation and utilization of this information is the responsibility of the user.

**Risk & Sensitivity Analysis**

	<u>Potato \$ per acre</u>	<u>Your Farm</u>
<b>A. Operating Costs</b>	\$2,625.18	_____
<b>B. Fixed Costs</b>	\$1,091.36	_____
<b>Total Costs</b>	\$3,816.55	_____

	<u>Potato - Gross Yield</u>				
	<u>305 CWT</u>	<u>335 CWT</u>	<u>365 CWT</u>	<u>395 CWT</u>	
<b>Estimated Farmgate</b>					
Price \$ per cwt	<b>\$11.66</b>	<b>\$11.66</b>	<b>\$11.66</b>	<b>\$11.66</b>	_____
Marketable Yield (cwt per acre)	<b>259</b>	<b>285</b>	<b>310</b>	<b>336</b>	_____

	<u>Up</u>		<u>Down</u>		
	<b>5%</b>	<b>10%</b>	<b>10%</b>	<b>5%</b>	
<b>Percent Price Variation</b>					<b>Percent Yield Variation</b>
<b>Higher Price (\$ per cwt)</b>	\$12.24	\$12.24	\$12.24	\$12.24	
<b>Lower Price (\$ per cwt)</b>	\$10.49	\$10.49	\$10.49	\$10.49	_____
<b>Higher Yield (cwt per acre)</b>	284.9	313.5	341.0	369.6	_____
<b>Lower Yield (cwt per acre)</b>	246.1	270.8	294.5	319.2	_____

**Higher Margin Scenario - Price Up 5% and Yield Up 10%**

<b>Gross Revenue / acre</b>	\$3,488.03	\$3,838.18	\$4,174.86	\$4,525.01	_____
<b>Marginal Returns</b>					
Over Operating Costs	\$862.85	\$1,213.00	\$1,549.68	\$1,899.83	_____
Over Total Costs (Net Profit)	(\$328.52)	\$21.63	\$358.32	\$708.47	_____
<b>Operating Expense Ratio</b>	75.3%	68.4%	62.9%	58.0%	_____

**Lower Margin Scenario - Price Down 10% and Yield Down 5%**

<b>Gross Revenue / acre</b>	\$2,582.05	\$2,841.25	\$3,090.48	\$3,349.68	_____
<b>Marginal Returns</b>					
Over Operating Costs	(\$43.14)	\$216.07	\$465.30	\$724.50	_____
Over Total Costs (Net Profit)	(\$1,234.50)	(\$975.30)	(\$726.06)	(\$466.86)	_____
<b>Operating Expense Ratio</b>	101.7%	92.4%	84.9%	78.4%	_____

**Note:** This budget is only a guide and is not intended as an in depth study of the cost of production of this industry. Interpretation and utilization of this information is the responsibility of the user.

## Irrigated Processing Potato - Input

### Assumptions

1. This budget outlines the cost of producing processing potatoes under irrigated conditions.
2. A potato land base of 780 harvested acres was assumed in developing this budget. The crop rotation was based on growing potatoes no more than 1 in 3 years.
3. Total gross yield per acre was estimated at 305 to 395 cwt/acre with marketable yield estimated at 259 to 336 cwt/acre.
4. MASC Crop Insurance, is based on 2017 rates at 80% coverage.
5. Utilities cost is based on flat rate for all yields.
6. All trucking operations related to marketing of processed potatoes were assumed to be custom hauled to the processors. A rate applicable to hauling potatoes approximately 100 miles was assumed.

### Total land base

Number of irrigation pivot circles	<b>6</b>
Acres per circle	<b>130</b>
Potato harvested acres (annual basis)	<b>780</b>
Potato rotation (time in rotation - how many years)	<b>3</b>
Total Acres	<b>2,880</b>
Total Rented Acres	<b>320</b>
Land Rental Per Acre (potato acres only)	<b>\$225</b>
Total Owned Acres	<b>2,560</b>
Owned Land Value Per Acre	<b>\$6,900</b>

### Yields

Dockage	<b>9%</b>
Shrink	<b>6%</b>

<b>Estimated Yields</b>	<u><b>Low</b></u>	<u><b>Medium</b></u>	<u><b>Med-High</b></u>	<u><b>High</b></u>
Gross Yield (cwt/acre)	<b>305</b>	<b>335</b>	<b>365</b>	<b>395</b>
Acres - Percentage	<b>0%</b>	<b>10%</b>	<b>70%</b>	<b>20%</b>
Marketable Yield (cwt/acre)	<b>259</b>	<b>285</b>	<b>310</b>	<b>336</b>

### Potato Contract Price

Base Rate (\$/cwt)	<b>\$11.66</b>
Bonus Rate (\$/cwt)	<b>\$0.00</b>
Penalty Rate (\$/cwt)	<b>\$0.00</b>

### Interest Rate

Operating	<b>5.00%</b>
Investment	<b>2.75%</b>

### 1.01 Seed Cost & Treatment Cost

	<u><b>Cost (\$/cwt)</b></u>	<u><b>Seeding Rate (cwt/acre)</b></u>	<u><b>Total Cost Per Acre</b></u>
Seed Cost	<b>\$15.00</b>	<b>18</b>	<b>\$270.00</b>
Cutting Cost - Custom Rate	<b>\$2.00</b>	<b>18</b>	<b>\$36.00</b>
Seed Treatment - Fungicide	<b>\$2.40</b>	<b>18</b>	<b>\$43.20</b>
Seed Treatment - Insecticide	<b>\$2.00</b>	<b>18</b>	<b>\$36.00</b>
			<b>\$385.20</b>

### 1.02 Fertilizer Cost

	<u><b>Bulk Price \$/tonne</b></u>	<u><b>Rate Lbs/acre</b></u>	<u><b>Actual Nutrient \$/lb</b></u>	<u><b>Total Cost Per Acre</b></u>
Nitrogen: (UAN) 28-0-0	<b>\$283</b>	<b>105</b>	\$0.458	<b>\$48.14</b>
Nitrogen: (urea) 46-0-0	<b>\$440</b>	<b>105</b>	\$0.434	<b>\$45.56</b>
Phosphate: 10-34-0	<b>\$591</b>	<b>65</b>	\$0.657	<b>\$42.72</b>

Phosphate: 11-52-0	<b>\$634</b>	<b>45</b>	\$0.459	<b>\$20.64</b>
Potash: 0-0-60	<b>\$415</b>	<b>260</b>	\$0.314	<b>\$81.57</b>
Sulphur: 20.5-0-0-24	<b>\$426</b>	<b>45</b>	\$0.424	<b>\$19.08</b>
Other (Micro, etc.)				<b><u>\$35.00</u></b>
				<b>\$292.71</b>

**Crop Pesticide Costs**

	<b>Times Applied</b>	<b>Cost Per Application</b>	<b>Total Cost Per Acre</b>
<b>1.03 Herbicide Costs</b>			
Preplant			<b>\$3.00</b>
Post emergent			<b><u>\$45.00</u></b>
			<b>\$48.00</b>

**1.04 Fungicide Costs & Insecticides**

Contact Fungicide	<b>11</b>	<b>\$6.50</b>	<b>\$71.50</b>
Systemic Fungicide	<b>2</b>	<b>\$20.00</b>	<b>\$40.00</b>
Phos Acid Fungicide	<b>3</b>	<b>\$26.67</b>	<b>\$80.01</b>
Insecticide	<b>1</b>	<b>\$20.00</b>	<b><u>\$20.00</u></b>
			<b>\$211.51</b>

**1.05 Fuel Costs (field & trucking)** Diesel Fuel Cost \$/litre **\$0.85**

<b>Field Operation</b>	<b>Times Over</b>	<b>Fuel Use Litres/Ac</b>	<b>Fuel Use Imp.Gal/Ac</b>	<b>Total Cost Per Acre</b>
Harrow	<b>0</b>	<b>0.75</b>	<b>0.16</b>	<b>\$0.00</b>
Rotera	<b>1</b>	<b>4.60</b>	<b>1.01</b>	<b>\$3.91</b>
Cultivate	<b>1</b>	<b>1.29</b>	<b>0.28</b>	<b>\$1.10</b>
Plant	<b>1</b>	<b>1.40</b>	<b>0.31</b>	<b>\$1.19</b>
Spray	<b>3</b>	<b>0.42</b>	<b>0.09</b>	<b>\$1.07</b>
Cultivate	<b>1</b>	<b>1.74</b>	<b>0.38</b>	<b>\$1.48</b>
Hilling	<b>2</b>	<b>1.74</b>	<b>0.38</b>	<b>\$2.96</b>
Fertilize	<b>1</b>	<b>0.42</b>	<b>0.09</b>	<b>\$0.36</b>
Harvest	<b>1</b>	<b>8.50</b>	<b>1.87</b>	<b>\$7.23</b>
Ripper	<b>1</b>	<b>5.75</b>	<b>1.26</b>	<b>\$4.89</b>
Tandem Disk	<b>1</b>	<b>1.85</b>	<b>0.41</b>	<b><u>\$1.57</u></b>
				<b>\$25.75</b>

**Truck Fuel-Harvesting**

Truck Capacity (cwts)	<b>275</b>
Fuel Consumption (miles/gal)	<b>2.5</b>
Distance to storage (miles)	<b>15</b>

**1.06 Trucking Costs - Processor**

Trucking Rate (\$/cwt) based on 70 miles to processor	<b>\$0.96</b>
Trucking Reimbursement (\$/cwt)	<b>\$0.35</b>

**1.07 Irrigation Costs**

Inches applied	<b>12</b>
Hours/pivot (.75" water)	<b>72</b>
Percent of pumping - Hydro	<b>60%</b>
Hourly pumping costs - Hydro	<b>\$5.25</b>
Percent of pumping - Diesel	<b>40%</b>
Hourly pumping costs - Diesel	<b>\$8.00</b>

**1.08 Maintenance & repairs**

	<b>Rate</b>	<b>Total Cost</b>	<b>Total Cost/ac</b>
Machinery	<b>6.25%</b>	<b>\$248,144</b>	<b>\$318</b>
Potato Storage	<b>1.50%</b>	<b>\$84,240</b>	<b>\$108</b>
Irrigation Equipment	<b>1.50%</b>	<b>\$17,385</b>	<b>\$22</b>

<b>1.09 Custom Work &amp; Rental</b>	<u>Number</u>	<u>Rate/ac</u>	<u>Total Cost/ac</u>	
Custom - aerial	14	\$9.00	\$126	
Custom - granular	2	\$9.00	\$18	
<b>1.10 Hired labour costs</b>	<u>Hours</u>	<u>Rate</u>	<u>Total Cost/ac</u>	
Labour per acre	16	\$25.00	\$400	
Acres			780	
	<b>Total</b>		<b>\$312,000</b>	
<b>1.11 Insurance Costs</b>	<u>Rate</u>	<u>Acres</u>		
Crop Insurance (80%)	\$51.75	780	\$40,365	
Hail Insurance	\$0.00	780	\$0	
Buildings & Equipment	0.25%		\$24,341	
Farm trucks (seasonal)	\$500	10	\$5,000	
Farm trucks (annual)	\$1,000	5	\$5,000	
Content Insurance (value of production)			0.5%	
Insured value of production (\$/cwt)			\$11.66	
<b>1.12 Utilities</b>	<u>Number</u>	<u>Rate</u>	<u>Months</u>	<u>Total Cost</u>
Hydro		\$7,875	10	\$78,750
Phone / Cell	6	\$100	12	\$7,200
<b>1.13 Other Costs</b>	<u>Rate</u>	<u>Acres</u>		
Accounting & Legal		0	\$6,500	
Publications & Membership			\$2,000	
Crop Consulting per acre	\$40	780	\$31,200	
Property Taxes	\$25.00	693	\$17,325	
Land Rental	\$225.00	87	\$19,575	
Shop Supplies			\$2,000	
Miscellaneous			\$2,000	

**Capital Costs**

**Depreciation** (straight line):

**Useful Life:**

Buildings	20 years
Storage Building	20 years
Machinery & Equipment	15 years
Irrigation Equipment	15 years

**Salvage Value (% of original cost)**

Buildings	5.0%
Storage Building	5.0%
Machinery & Equipment	15.0%
Irrigation Equipment	30.0%

**Capital Investment**

**Land Value**

Owned land 2,560 ac. @ \$6,900/acre **\$17,664,000**

**Storage Facilities**

	<u>Size</u>	<u>Rate/cwt</u>	
Building, climate control & loading area	312,000	\$18.00	\$5,616,000
Machine Shed Workshop			<u>\$150,000</u>



<b>Total Storage Costs</b>			<b>\$5,766,000</b>
<b>Irrigation System</b>	<u>Value</u>	<u>Number</u>	
River pump station	\$74,000	1	\$74,000
Booster pump station	\$45,000	1	\$45,000
Well & Pump	\$50,000	1	\$50,000
Water Reservoir	\$150,000	0	\$0
Pipeline (per 2 miles)	\$40,000	3	\$120,000
Electrical & pipeline	\$25,000	6	\$150,000
Pivots & generators	\$120,000	6	\$720,000
<b>Total Irrigation Costs</b>			<b>\$1,159,000</b>
<b>Machinery &amp; Equipment</b>	<u>Value</u>	<u>Number</u>	
Bin piler (primary)	\$110,000	1	\$110,000
Bin piler (secondary)	\$33,600	1	\$33,600
Picking table	\$300,000	1	\$300,000
Conveyor (3'x150')	\$56,000	3	\$168,000
Dirt conveyor	\$22,400	1	\$22,400
Diggers	\$320,000	2	\$640,000
Hog	\$89,600	1	\$89,600
Skid Steer	\$72,800	1	\$72,800
Tractor (280hp)	\$437,700	2	\$875,400
Tractor (500hp)	\$524,100	1	\$524,100
Ripper	\$28,000	1	\$28,000
Roterra	\$22,400	1	\$22,400
Cultivator	\$28,000	1	\$28,000
Disc	\$22,400	1	\$22,400
Even Flow Tub	\$89,600	1	\$89,600
Tandem Truck	\$44,800	10	\$448,000
Belt Bottom Boxes	\$33,600	10	\$336,000
Planter	\$160,000	1	\$160,000
(enter equipment here)	\$0	1	\$0
(enter equipment here)	\$0	1	\$0
(enter equipment here)	\$0	1	\$0
(enter equipment here)	\$0	1	\$0
(enter equipment here)	\$0	1	\$0
(enter equipment here)	\$0	1	\$0
<b>Total Machinery Costs</b>			<b>\$3,970,300</b>
		<b>Per Acre</b>	<b>\$5,090</b>
<b>Total Capital Investment</b>			<b>\$28,559,300</b>
<b>Labour Costs</b> (Owner Labour and Management)			
Hours per acre			<b>4</b>
Rate per hour			<b>\$25.00</b>
<b>Return on Asset (ROA) Assumptions</b>			
Total annual non-potato acres in crop rotation			<b>2,100</b>
Estimated non-potato acres in crop rotation (per acre)			
- Marginal Return Over Total Costs (Net Profit)			<b>\$25.00</b>
- Land Investment Cost			<b>\$84.33</b>
- Machinery Investment Cost			<b>\$12.38</b>
- Operating Interest			<b>\$6.25</b>

## Assumptions

1. This budget outlines the cost of producing processing potatoes under irrigated conditions and is based on a pivot system.
2. A potato land base of 2,880 harvested acres was assumed in developing this budget. The cost of production does not include the cost of maintaining the corners not under irrigation. The crop rotation was based on growing potatoes no more than 1 in 3 years.
3. Total gross yield per acre was estimated at 305 to 395 cwt/acre with marketable yield estimated at 259 to 336 cwt/acre.
4. MASC Crop Insurance, is based on 2018 rates at 80% coverage.
5. All trucking operations related to marketing of processed potatoes were assumed to be custom hauled to the processors. A rate applicable to hauling potatoes approximately 70 miles was assumed.

## Irrigated Potato Cost of Production Worksheet

<b>A. Operating Costs</b>		<u><b>Your Cost</b></u>
<b>1.01 Seed &amp; Cutting Cost</b>		
Seed	18 cwt/acre	
x	<u>\$15.00</u> \$/cwt	
=	\$270.00 \$/acre	
Cutting	18 cwt/acre	
x	<u>\$2.00</u> \$/cwt	
=	\$36.00 \$/acre	
<b>Total</b>	<b>= \$306.00 \$/acre</b>	
<b>Treatment Cost</b>		
	\$2.40 \$/cwt fungicide	
+	\$2.00 \$/cwt insecticide	
x	<u>18</u> cwt/acre	
=	<b>\$79.20 \$/acre</b>	
<b>1.02 Fertilizer</b>		
Nitrogen: (UAN) 28-0-0	105 lbs/acre	
x	<u>\$0.458</u> \$ / lb	
=	\$48.14 \$/acre	
Nitrogen: (urea) 46-0-0	105 lbs/acre	
x	<u>\$0.434</u> \$ / lb	
=	\$45.56 \$/acre	
Phosphorus: 10-34-0	65 lbs/acre	
x	<u>\$0.657</u> \$ / lb	
=	\$42.72 \$/acre	
Phosphorus: 11-52-0	45 lbs/acre	
x	<u>\$0.459</u> \$ / lb	
=	\$20.64 \$/acre	

Potash		260	lbs/acre	_____
	x	<u>\$0.314</u>	<u>\$ / lb</u>	_____
	=	\$81.57	\$/acre	_____
Sulfur		45	lbs/acre	_____
	x	<u>\$0.424</u>	<u>\$ / lb</u>	_____
	=	\$19.08	\$/acre	_____
Micro		\$35.00	\$/acre	_____
<b>Total</b>	<b>=</b>	<b>\$292.71</b>	<b>\$/acre</b>	_____

**1.03 Herbicide**

Preplant		\$3.00	\$/acre	_____
Post emergent		<u>\$45.00</u>	<u>\$/acre</u>	_____
<b>Total</b>	<b>=</b>	<b>\$48.00</b>	<b>\$/acre</b>	_____

**1.04 Fungicide & Insecticide**

Contact Fungicide		11	number applications	_____
	x	<u>\$6.50</u>	cost per application	_____
	=	\$71.50	\$/acre	_____
Systemic Fungicide		2	number applications	_____
	x	<u>\$20.00</u>	cost per application	_____
	=	\$40.00	\$/acre	_____
Phos Acid Fungicide		3	number applications	_____
	x	<u>\$26.67</u>	cost per application	_____
	=	\$80.01	\$/acre	_____
Insecticide		1	number applications	_____
	x	<u>\$20.00</u>	cost per application	_____
	=	\$20.00	\$/acre	_____
<b>Total</b>	<b>=</b>	<b>\$211.51</b>	<b>\$/acre</b>	_____

**1.05 Fuel Costs**

a) Field Fuel Costs			Fuel Cost \$/litre	\$0.85	_____
<b>Field Operation</b>	<b>Times Over</b>	<b>Fuel Use Litres/Ac</b>	<b>Fuel Use Imp.Gal/Ac</b>	<b>Total Cost Per Acre</b>	
Harrow	0	0.75	0.16	\$0.00	_____
Roterra	1	4.60	1.01	\$3.91	_____
Cultivate	1	1.29	0.28	\$1.10	_____
Plant	1	1.40	0.31	\$1.19	_____
Spray	3	0.42	0.09	\$1.07	_____
Cultivate	1	1.74	0.38	\$1.48	_____
Hilling	2	1.74	0.38	\$2.96	_____
Fertilize	1	0.42	0.09	\$0.36	_____
Harvest	1	8.50	1.87	\$7.23	_____
Ripper	1	5.75	1.26	\$4.89	_____
Tandem Disk	1	1.85	0.41	<u>\$1.57</u>	_____
				<b>\$25.75</b>	_____

b) Truck Fuel Costs - harvest from field to storage

Low Yield		305	gross yield (cwt)/ac.	_____
	=	15.25	tons/ac.	_____

	÷	13.75	truck capacity (tons)	_____
	=	1.11	trips/acre	_____
	x	<u>15</u>	<u>distance/trip (miles)</u>	_____
	=	16.64	total miles/acre	_____
	÷	2.5	fuel consumption (miles/gal)	_____
	=	6.65	gallons required fuel	_____
	x	<u>\$0.85</u>	<u>fuel cost (\$/litre)</u>	_____
	=	\$25.71	field to storage fuel cost	_____
	+	<u>\$25.75</u>	field fuel cost	_____
	=	\$51.46	Fuel Costs - Field	_____
	÷	<u>259</u>	marketable yield (cwt)/ac.	_____
<b>Total</b>	=	<b>\$0.1987</b>	<b>per cwt</b>	_____
Medium Yield		335	gross yield (cwt)/ac.	_____
	=	16.75	tons/ac.	_____
	÷	13.75	truck capacity (tons)	_____
	=	1.22	trips/acre	_____
	x	<u>15</u>	<u>distance/trip (miles)</u>	_____
	=	18.27	total miles/acre	_____
	÷	2.5	fuel consumption (miles/gal)	_____
	=	7.31	gallons required fuel	_____
	x	<u>\$0.85</u>	<u>fuel cost (\$/litre)</u>	_____
	=	\$28.24	field to storage fuel cost	_____
	+	<u>\$25.75</u>	field fuel cost	_____
	=	\$53.99	Fuel Costs - Field	_____
	÷	<u>285</u>	marketable yield (cwt)/ac.	_____
<b>Total</b>	=	<b>\$0.1894</b>	<b>per cwt</b>	_____
Med-High Yield		365	gross yield (cwt)/ac.	_____
	=	18.25	tons/ac.	_____
	÷	13.75	truck capacity (tons)	_____
	=	1.33	trips/acre	_____
	x	<u>15</u>	<u>distance/trip (miles)</u>	_____
	=	19.91	total miles/acre	_____
	÷	2.5	fuel consumption (miles/gal)	_____
	=	7.96	gallons required fuel	_____
	x	<u>\$0.85</u>	<u>fuel cost (\$/litre)</u>	_____
	=	\$30.77	field to storage fuel cost	_____
	+	<u>\$25.75</u>	field fuel cost	_____
	=	\$56.52	Fuel Costs - Field	_____
	÷	<u>310</u>	marketable yield (cwt)/ac.	_____
<b>Total</b>	=	<b>\$0.1823</b>	<b>per cwt</b>	_____
High Yield		395	gross yield (cwt)/ac.	_____
	=	19.75	tons/ac.	_____
	÷	13.75	truck capacity (tons)	_____
	=	1.44	trips/acre	_____
	x	<u>15</u>	<u>distance/trip (miles)</u>	_____
	=	21.55	total miles/acre	_____
	÷	2.5	fuel consumption (miles/gal)	_____
	=	8.62	gallons required fuel	_____
	x	<u>\$0.85</u>	<u>fuel cost (\$/litre)</u>	_____
	=	\$33.30	field to storage fuel cost	_____
	+	<u>\$25.75</u>	field fuel cost	_____
	=	\$59.05	Fuel Costs - Field	_____

	÷	<u>336</u>	marketable yield (cwt)/ac.	
<b>Total</b>	=	<b>\$0.1757</b>	<b>per cwt</b>	_____
<b>Total Fuel Costs</b>	=	<b>\$56.77</b>	<b>\$/acre</b>	_____

**1.06 Trucking Costs - from storage to processor (Custom haul)**

Low Yield		259	cwt net yield/acre	_____
	x	<u>\$0.61</u>	<u>net trucking rate/cwt</u>	_____
	=	<b>\$157.99</b>	<b>\$/acre</b>	_____
Medium Yield		285	cwt net yield/acre	_____
	x	<u>\$0.61</u>	<u>net trucking rate/cwt</u>	_____
	=	<b>\$173.85</b>	<b>\$/acre</b>	_____
Med-High Yield		310	cwt net yield/acre	_____
	x	<u>\$0.61</u>	<u>net trucking rate/cwt</u>	_____
	=	<b>\$189.10</b>	<b>\$/acre</b>	_____
High Yield		336	cwt net yield/acre	_____
	x	<u>\$0.61</u>	<u>net trucking rate/cwt</u>	_____
	=	<b>\$204.96</b>	<b>\$/acre</b>	_____
<b>Total</b>	=	<b>\$190.75</b>	<b>\$/acre</b>	_____

**1.07 Irrigation Costs**

Hydro		72	hours for .75 inches	_____
	=	96	hours for 1.0 inches	_____
	x	12	inches water applied	_____
	=	1152	hours pumping	_____
	x	<u>\$5.25</u>	<u>hourly pumping costs</u>	_____
	x	3.6	number of pivots	_____
	÷	<u>468</u>	<u>acres</u>	_____
	=	<b>\$46.52</b>	<b>\$/acre</b>	_____
Diesel		72	hours for .75 inches	_____
	=	96	hours for 1.0 inches	_____
	x	12	inches water applied	_____
	=	1152	hours pumping	_____
	x	<u>\$8.00</u>	<u>hourly pumping costs</u>	_____
	x	2.4	number of pivots	_____
	÷	<u>312</u>	<u>acres</u>	_____
	=	<b>\$70.89</b>	<b>\$/acre</b>	_____
<b>Total</b>	=	<b>\$56.27</b>	<b>\$/acre</b>	_____

**1.08 Maintenance & Repairs**

		\$248,144	machinery	_____
	+	\$84,240	potato storage	_____
	<u>±</u>	<u>\$17,385</u>	<u>irrigation</u>	_____
	=	\$349,769	total	_____
	÷	<u>780</u>	<u>acres</u>	_____
	=	<b>\$448.42</b>	<b>\$/acre harvested</b>	_____

**1.09 Custom Work & Rental**

		14	aerial applications	_____
	<u>x</u>	<u>\$9.00</u>	<u>rate</u>	_____
	=	\$126.00	total per acre	_____
		2	aerial applications	_____
	<u>x</u>	<u>\$9.00</u>	<u>rate</u>	_____

	=	\$18.00	total per acre	_____
<b>Total</b>	=	<b>\$144.00</b>	<b>\$/acre</b>	_____
<b>1.10 Hired Labour Costs</b>				
		\$16	Hours per acre	_____
	x	<u>\$25.00</u>	<u>rate</u>	_____
	=	<b>\$400.00</b>	<b>total per acre</b>	_____
<b>1.11 Insurance</b>				
		\$0	hail insurance	_____
	+	\$40,365	crop insurance	_____
	+	\$5,000	farm trucks (seasonal)	_____
	+	\$5,000	farm trucks (annual)	_____
	+	<u>\$24,341</u>	<u>buildings &amp; equipment</u>	_____
	=	\$74,706	total insurance	_____
	÷	<u>780</u>	<u>acres</u>	_____
	=	<b>\$95.78</b>	<b>\$/acre</b>	_____
<b>Content insurance</b>				
<b>Low Yield</b>				
		259	gross yield (cwt)/ac.	_____
	x	\$11.66	Insured value of production (\$/cwt)	_____
	x	<u>0.5%</u>	content insurance	_____
	=	\$15.10	per acre	_____
	÷	<u>259</u>	marketable yield (cwt)/ac.	_____
Total	=	\$0.0583	per cwt	_____
<b>Medium Yield</b>				
		285	gross yield (cwt)/ac.	_____
	x	\$11.66	Insured value of production (\$/cwt)	_____
	x	<u>0.5%</u>	content insurance	_____
	=	\$16.62	per acre	_____
	÷	<u>285</u>	marketable yield (cwt)/ac.	_____
Total	=	\$0.0583	per cwt	_____
<b>Med-High Yield</b>				
		310	gross yield (cwt)/ac.	_____
	x	\$11.66	Insured value of production (\$/cwt)	_____
	x	<u>0.5%</u>	content insurance	_____
	=	\$18.07	per acre	_____
	÷	<u>310</u>	marketable yield (cwt)/ac.	_____
Total	=	\$0.0583	per cwt	_____
<b>High Yield</b>				
		336	gross yield (cwt)/ac.	_____
	x	\$11.66	Insured value of production (\$/cwt)	_____
	x	<u>0.5%</u>	content insurance	_____
	=	\$19.59	per acre	_____
	÷	<u>336</u>	marketable yield (cwt)/ac.	_____
Total	=	\$0.0583	per cwt	_____
<b>Total Insurance</b>	=	<b>\$114.01</b>	<b>\$/acre</b>	_____
<b>1.12 Utilities</b>				
		\$78,750	hydro	_____
	+	<u>\$7,200</u>	<u>telephone</u>	_____
	=	\$85,950	total utilities	_____
	÷	<u>780</u>	<u>acres</u>	_____
	=	<b>\$110.19</b>	<b>\$/acre</b>	_____

**1.13 Other Costs**

		\$6,500	accounting & legal	_____
+		\$2,000	membership	_____
+		\$31,200	crop consulting	_____
+		\$17,325	property taxes	_____
+		\$19,575	land rental	_____
+		\$2,000	shop supplies	_____
+		<u>\$2,000</u>	<u>other costs</u>	_____
=		\$80,600	total other costs	_____
÷		<u>780</u>	<u>acres</u>	_____
=		<b>\$103.33</b>	<b>\$/acre</b>	_____

**1.14 Interest on Operating Costs**

(Operating interest is charged on one-half the sub-total operating costs)

		\$2,561.15	operating costs	_____
÷		2	average	_____
=		\$1,280.58	average value	_____
x		5.0%	<u>operating interest</u>	_____
=		<b>\$64.03</b>	<b>\$/acre</b>	_____

**Capital Investment**

**Land Value**

Own land 2,560 ac. @ \$6,900/ac **\$17,664,000** \_\_\_\_\_

**Storage Facilities (312,000 cwt @ \$18.00 per cwt)**

Building & Climate Control	<b>\$5,616,000</b>	_____
Workshop	<b>\$150,000</b>	_____
<b>Total Storage Costs</b>	<b>\$5,766,000</b>	_____

**Irrigation System**

River pump station	<b>\$74,000</b>	_____
Booster pump station	<b>\$45,000</b>	_____
Well & Pump	<b>\$50,000</b>	_____
Water Reservoir	<b>\$0</b>	_____
Pipeline (per 2 miles)	<b>\$120,000</b>	_____
Electrical & pipeline	<b>\$150,000</b>	_____
Pivots & generators	<b>\$720,000</b>	_____
<b>Total Irrigation Costs</b>	<b>\$1,159,000</b>	_____

**Machinery & Equipment**

**\$3,970,300** \_\_\_\_\_

**Total Capital Investment** **\$28,559,300** \_\_\_\_\_

**B. Fixed Costs**

**2.01 Land Costs**

		\$6,900	\$/acre	_____
x		2.75%	investment rate	_____
x		<u>88.9%</u>	<u>potato acres - owned land</u>	_____

= \$168.67 \$/acre \_\_\_\_\_

**2.02 Depreciation**

Original Value - Salvage Value  
Useful life (yrs.)

Storage Facilities			
	\$5,766,000	original value	_____
-	\$288,300	salvage value	_____
÷	20	useful life (yrs.)	_____
÷	<u>780</u>	<u>total acres</u>	_____
=	\$351.13	\$/acre	_____
Machinery & Equipment			
	\$3,970,300	original value	_____
-	\$595,545	salvage value	_____
÷	15	useful life (yrs.)	_____
÷	<u>780</u>	<u>total acres</u>	_____
=	\$288.44	\$/acre	_____
Irrigation System			
	\$1,159,000	original value	_____
-	\$347,700	salvage value	_____
÷	15	useful life (yrs.)	_____
÷	<u>780</u>	<u>total acres</u>	_____
=	\$69.34	\$/acre	_____
<b>Total =</b>	<b>\$708.92</b>	<b>\$/acre</b>	_____

**2.03 Investment Cost**

Original Value + Salvage Value X Investment Rate  
2

Storage Facilities			
	\$5,766,000	original value	_____
+	\$288,300	salvage value	_____
÷	2	average value	_____
x	2.8%	Investment rate	_____
÷	<u>780</u>	<u>total acres</u>	_____
=	\$106.73	\$/acre	_____
Machinery & Equipment			
	\$3,970,300	original value	_____
+	\$595,545	salvage value	_____
÷	2	average value	_____
x	2.8%	Investment rate	_____
÷	<u>780</u>	<u>total acres</u>	_____
=	\$80.49	\$/acre	_____
Irrigation System			
	\$1,159,000	original value	_____



+	\$347,700	salvage value	
÷	2	average value	
x	2.8%	Investment rate	
÷	<u>780</u>	<u>total acres</u>	
=	\$26.56	\$/acre	
<b>Total =</b>	<b>\$213.78</b>	<b>\$/acre</b>	

**C. Own Labour Costs**

	4	hours/acre	
x	<u>\$25.00</u>	<u>\$/hour</u>	
=	<b>\$100.00</b>	<b>\$/acre</b>	

**Profitability & Breakeven Analysis:**

Gross Revenue = Price per unit x Yield per acre  
 (eg. potato: \$11.66/cwt x 259 marketable cwt/ac = \$3,019.94/ac)

Net Profit = Gross Revenue - Total Cost  
 (eg. potato: \$3,019.94 gross revenue - \$3,816.55 total cost = -\$796.61 per acre)

Operating Expense Ratio = (Operating Cost / Gross Revenue) x 100  
 (eg. potato: \$2,625.18 operating expense / \$3,020 gross revenue = 86.9%)

Breakeven Price = Cost / Target Yield (eg. potato cost \$3,816.55 / 259 cwt = \$14.74 per cwt)

Breakeven Yield = Cost / Price per Unit  
 (eg. potato cost \$3,816.55 / \$11.66 cwt / (1 - (0.09 shrink + 0.06 dockage)) = 385.1 cwt)

Return on Assets = 
$$\frac{(((\text{Potato acres: net profit} + \text{operating interest} + \text{land inv. cost} + \text{investment cost}) \times \text{acres}) + (\text{Non-potato acres: net profit} + \text{operating interest} + \text{land inv. cost} + \text{investment cost}) \times \text{acres}))}{\text{Total Capital Investment}}$$
  
 (eg. 365 CWT potato: (((-\$201.95 net profit + \$64.03 op. interest + \$168.67 land inv. cost + \$213.78 inv. cost) x 780 potato acres) + (\$25. net profit + \$6.25 op. interest + \$84.33 land inv. cost + \$12.38 inv. cost) x 2100 rotation acres))) / \$28,559,300 total capital investment = 1.609% ROA

Created and maintained by [Manitoba Agriculture Farm Management](#) January, 2018

For more information, contact your local [Manitoba Agriculture Office](#) or:

[Roy Arnott](#)  
 Farm Management Specialist



**For more information**

- Contact your local Manitoba Agriculture Office.
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