

Guidelines For Estimating Seabuckthorn Berry Production Costs

Date: May, 2006

The projected seabuckthorn berry production costs in this publication have been prepared to assist you in developing your own production costs.

The capital and cash input costs associated with growing seabuckthorn berries in Manitoba are substantial. Detailed planning is necessary when budgeting for capital expenditures and also for the annual operating costs. The importance of good financial planning is evident by noting the capital required for 5 acres of seabuckthorn berries may be in the vicinity of \$65,000. Cash costs of establishing the crop run about \$16,000 in the four years prior to picking before income begins to flow.

The budget should be used as a guide only as each situation may have higher or lower costs than those listed. Costs and yields on each farm differ due to soil type, climatic conditions and agronomic practices. Therefore, producers are encouraged to substitute their own figures in the attached budget to develop their own cost of production for saskatoon berry production.

Disclaimer: This budget is only a guide and is not intended as an in depth study of the cost of production of the Manitoba Seabuckthorn Berry industry. Interpretation and utilization of this information is the responsibility of the user. If you require assistance with developing your individual budget, please contact your local MAFRI Farm Business Specialist or Regional Crop Specialist.

Industry Overview

The sea buckthorn (*Hippophae rhamnoides* L.) belongs to the family Elaeagnaceae. Sea buckthorn is native to Europe and Asia and was introduced to Canada some time ago. Introduced to Canada as ornamental and shelterbelt shrub. Recently planted in orchards for commercial production across Canada, but mostly on the prairies. The sea buckthorn is a medium deciduous shrub six to 13 feet (2 to 4 m) in height. The trees are dioecious meaning there are male and female plants. Sea buckthorn plants are very hardy and can withstand temperatures of -43 to 40 °C. Used for centuries in Eurasia for food and medicinal uses. In ancient Greece, sea-buckthorn was known as a remedy for horses, using leaves and young branches in the fodder. Seabuckthorn products were utilized in the diet of Soviet cosmonauts to reduce stresses of extended space missions (skin cream and juice). Seabuckthorn juice is claimed to be the first fruit juice in space. There are two main challenges for the Manitoba Seabuckthorn industry: marketing and harvesting. The early varieties of Seabuckthorn planted on the prairies (Sinesis, Indian Summer) are very difficult to harvest due to the presence of thorns and the tight attachment of the fruit to the stem. A cut-branch harvest method similar to methods used in Quebec and Germany has been tested in Manitoba with success, however a working field model has not been developed to date. Marketing of seabuckthorn has been difficult due to lack of quality buyers, limited domestic market development and lack of processing facilities on the prairies for seabuckthorn. The functional food aspects of this fruit crop are becoming more well known in North America and are increasing consumer knowledge of this fruit.

Seabuckthorn Berry - Cost of Production Summary May, 2006

	Establishment ¹	Picking	Average	<u>Your Cost</u>
	<u>Years 1 - 4</u> <u>Cost / \$acre</u>	<u>Years 5 - 20</u> <u>Cost / \$acre</u>	<u>Annual</u> <u>Cost / \$lb</u>	
A. Operating Costs				
1.01 Seed & Plants ¹	\$2,500.00	\$489.30	\$0.1439	_____
1.02 Fertilizer	\$0.00	\$0.00	\$0.0000	_____
1.03 Herbicides	\$6.00	\$0.00	\$0.0000	_____
1.04 Insecticides	\$0.00	\$0.00	\$0.0000	_____
1.05 Fungicides	\$0.00	\$0.00	\$0.0000	_____
1.06 Field Fuel Costs	\$35.00	\$14.18	\$0.0042	_____
1.07 Custom Costs	\$4.00	\$162.00	\$0.0476	_____
1.08 Repair & Maintenance	\$798.00	\$199.50	\$0.0587	_____
1.09 Miscellaneous	\$565.00	\$20.00	\$0.0059	_____
1.10 Land Taxes	<u>\$24.00</u>	<u>\$6.00</u>	<u>\$0.0018</u>	_____
Subtotal Operating	\$3,932.00	\$890.98	\$0.2600	_____
1.11 Interest on Operating	\$117.96	\$26.73	\$0.0079	_____
Total Operating Costs	\$4,049.96	\$917.71	\$0.2679	_____
B. Fixed Costs				
2. Depreciation				
2.01 Machinery	\$3,168.00	\$792.00	\$0.2329	_____
2.02 Other	\$960.00	\$240.00	\$0.0706	_____
3. Investment				
3.01 Land	\$80.00	\$20.00	\$0.0059	_____
3.02 Machinery	\$774.40	\$193.60	\$0.0569	_____
3.03 Other	<u>\$352.00</u>	<u>\$88.00</u>	<u>\$0.0259</u>	_____
Total Fixed Costs	\$5,334.40	\$1,333.60	\$0.3922	_____
C. Labour	\$401.54	\$1,690.00	\$0.4971	_____
Total Cost of Production	\$9,785.90	\$3,941.31	\$1.1572	_____

1. The cost of establishing the crop of \$9,785.90 per acre, over a 4 year period, was spread over 20 years at \$489.30 per year.

Disclaimer: This budget is only a guide and is not intended as an in depth study of the cost of production of the Manitoba Seabuckthorn Berry industry.

Seabuckthorn Berry Assumptions

Number of acres in production	5
Market Value (\$/acre)	\$500
Land Taxes (\$/acre)	\$6.00
Fuel Price (Diesel \$/litre)	\$0.80
Interest on Operating	6.0%
Interest on Investment	4.0%

Crop Rotation and Yields

	<u>Year</u>	<u>Gross Yield</u> <u>lbs/acre</u>	<u>Marketable Yield</u> <u>lbs/acre (90%)</u>
Establishment Year 1	1	0	0
Year 2	2	0	0
Year 3	3	0	0
Year 4	4	0	0
Year 5 (1st picking)	5	3,000	2700
Year 6	6	3,000	2700
Year 7	7	4,000	3600
Year 8	8	4,000	3600
Year 9	9	5,000	4500
Year 10	10	5,000	4500
Year 11	11	5,000	4500
Year 12	12	5,000	4500
Year 13	13	5,000	4500
Year 14	14	5,000	4500
Year 15	15	5,000	4500
Year 16	16	5,000	4500
Year 17	17	4,000	3600
Year 18	18	4,000	3600
Year 19	19	3,000	2700
Year 20	20	3,000	2700
	Total Yield (lbs/acre)	68,000	61,200
	Average Yield (lbs/acre)	3,400	3,060

<u>Capital Costs</u>		<u>Market Value</u>	<u>Allocated % Seabuckthorn</u>	<u>Allocated \$ Seabuckthorn</u>
<u>Land Value</u>				
	Land Cost	\$2,500	100%	\$2,500
<u>Machinery Costs</u>				
	Tractor	50 hp \$30,000	100%	\$30,000
	Mechanical planter	\$0	100%	\$0
	Quad	\$8,000	100%	\$8,000
	Wagon	\$1,000	100%	\$1,000
	Blower/Fan	\$500	100%	\$500
	Rotary mower	\$2,500	100%	\$2,500
	Cultivator	\$0	50%	\$0
	Other field equip	\$0	50%	\$0
	Harvester	\$0	100%	\$0
	Pruning Equipment	\$2,000	100%	\$2,000
	Total	\$44,000		\$44,000
<u>Other Costs</u>				
	Storage Shed	\$5,000	100%	\$5,000
	Quick Freeze Unit	\$0	100%	\$0
	Holding Freezer	\$15,000	100%	\$15,000
	Other	\$0	100%	\$0
	Irrigation Equipment	\$0	100%	\$0
	Total	\$20,000		\$20,000
	Total Investment	\$66,500		\$66,500
Average Investment	Land	\$500 \$/acre		
	Machinery	\$8,800 \$/acre		
	Other	\$4,000 \$/acre		
	Total	\$13,300 \$/acre		

Establishment Year Costs

Seed and Plant Costs

Saskatoon	
Seeding rate trees/acre	1,000 trees/ac
Seed cost per plant	\$2.50 \$/ plant

Fertilizer

Establishment year 1	\$0.00 \$/acre
Applicator rental	\$0.00 \$/acre
Establishment years 2 - 4	\$0.00 \$/acre

Herbicides

Establishment year 1	Burn-off	\$6.00
Establishment years 2 - 4		\$0.00

Insecticides

Establishment year 1	\$0.00
Establishment years 2 - 4	\$0.00

Fungicides

Establishment year 1	\$0.00
Establishment years 2 - 4	\$0.00

Field Operations:

	<u>Times</u> <u>Over</u>	<u>Width</u> <u>Feet</u>	<u>Speed</u> <u>MPH</u>	<u>Tractor</u> <u>HP</u>	
<u>Establish year 1</u>					
Cultivate	1	25	5	100	
Spray	1	15	5	50	Custom
Cultivate	1	25	5	100	
Plant	1	18	5	0	
Mulching	1	4	2	50	
Seed Grass	1				Labour
Harrow	1	4	5	50	
<u>Establish years 2 - 4</u>					
Mowing	3	5	4	50	

Custom & Rental Operations

Establishment year 1 **\$4.00** Custom Spray \$/acre
Establishment years 2 - 4

Repairs & Maintenance

% rate of investment **1.5%**

Miscellaneous

Establishment year 1 Plastic Mulch **0.66** rolls/acre
\$250.00 \$/roll
Establishment years 2 - 4 **\$100.00** \$/acre

Labour

Establish year 1

Hours/acre

Weed Control **2.0**
Pest control **0.0**
Mowing **1.5**
Monitoring **4.0**
Mulch application **10.0**
Field Operations **2.2**
Total Labour Hours **19.7 hrs/acre**

Establish years 2 - 4

Mowing **1.5 hrs/acre**
Monitoring **4.0 hrs/acre**

Labour Rate per hour **\$10.00** \$/hour

Seabuckthorn Berry Cost of Production Worksheet
Establish - Pre Plant & Planting Year Details

				<u>Your Cost</u>
1.01 Seed & Plants				
Plants		1,000	plants/acre	_____
	x	<u>\$2.50</u>	<u>\$/plant</u>	_____
	=	\$2,500.00	\$/acre	_____
1.02 Fertilizer				
Establish Year 1		\$0.00	\$/acre	_____
Applicator rental	±	<u>\$0.00</u>	<u>\$/acre</u>	_____
Establish Years 2 -4				_____
Total Costs	=	\$0.00	\$/acre	_____
1.03 Herbicides				
Establish Year 1	=	\$6.00	\$/acre	_____
1.04 Insecticides				
Establish Year 1	=	\$0.00	\$/acre	_____
1.05 Fungicides				
Establish Year 1	=	\$0.00	\$/acre	_____

Your Cost

1.06 Field Fuel Costs

Establish year 1

<u>Operation</u>	<u>Times Over</u>	<u>Width feet</u>	<u>Speed mph</u>	<u>Fuel \$/ac.</u>
Cultivate	1	25	5	\$1.51
Spray	1	15	5	\$1.26
Cultivate	1	25	5	\$1.51
Plant	1	18	5	\$0.00
Mulching	1	4	2	\$11.81
Seed Grass	0	0	0	\$0.00
Harrow	1	4	5	\$4.73
Total				\$20.82

Establish years 2 - 4

Mowing	3	5	4	\$14.18
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1.07 Custom Costs

Custom Spray \$/acre		\$4.00	\$/acre
Other	<u>±</u>	<u>\$0.00</u>	<u>\$/acre</u>
	=	\$4.00	\$/acre

1.08 Repairs and Maintenance

		1.5%	percentage rate
x	\$13,300		investment/acre
=	\$199.50		\$/acre
<u>x</u>	<u>4</u>		<u>years</u>
=	\$798.00		\$/acre

1.09 Miscellaneous

Plastic Mulch		0.66	bales/acre
<u>x</u>	<u>\$250.00</u>		<u>\$/bale</u>
=	\$165.00		\$/acre
Other		\$100.00	\$/acre
x	4		years
=	\$400.00		\$/acre
Total Miscellaneous	=	\$565.00	\$/acre

1.10 Land Taxes

=	\$6.00	\$/acre
<u>x</u>	<u>4</u>	<u>years</u>
=	\$24.00	\$/acre

1.11 Interest on Operating

	\$3,932.00	subtotal operating
÷	2	average
<u>x</u>	<u>6.0%</u>	<u>interest rate</u>
=	\$117.96	\$/acre

Original Value - Salvage Value
Useful Life

2. Depreciation

2.01 Machinery

Your Cost

	\$8,800.00	cost/acre	_____
-	\$880.00	salvage value	_____
÷	<u>10</u>	<u>useful life</u>	_____
=	\$792.00	\$ /acre	_____
X	<u>4</u>	<u>years</u>	_____
=	\$3,168.00	\$ /acre	_____

2.02 Other Equipment

	\$4,000.00	cost/acre	_____
-	\$400.00	salvage value	_____
÷	<u>15</u>	<u>useful life</u>	_____
=	\$240.00	\$ /acre	_____
X	<u>4</u>	<u>years</u>	_____
=	\$960.00	\$ /acre	_____

3. Investment

$$\frac{\text{Original Value} + \text{Salvage Value}}{2} \times \text{Investment Rate}$$

3.01 Land

	\$500.00	cost/acre	_____
X	<u>4.0%</u>	<u>% investment rate</u>	_____
=	\$20.00	\$ /acre	_____
X	<u>4</u>	<u>years</u>	_____
=	\$80.00	\$ /acre	_____

3.02 Machinery

	\$8,800.00	cost/acre	_____
+	\$880.00	salvage value	_____
÷	<u>2</u>	<u>average</u>	_____
X	<u>4.0%</u>	<u>% investment rate</u>	_____
=	\$193.60	\$ /acre	_____
X	<u>4</u>	<u>years</u>	_____
=	\$774.40	\$ /acre	_____

3.03 Other Equipment

Your Cost

	\$4,000.00	cost/acre	_____
+	\$400.00	salvage value	_____
÷	2	average	_____
X	4.0%	<u>% investment rate</u>	_____
=	\$88.00	\$ /acre	_____
x	4	years	_____
=	\$352.00	\$ /acre	_____

Labour

Establish year 1

	2.0	hrs/ac weed control	_____
+	0.0	hrs/ac pest control	_____
+	0.0	hrs/ac mowing	_____
+	4.0	hrs/ac monitoring	_____
+	10.0	hrs/ac multching	_____
+	2.2	hrs/ac field operations	_____
X	<u>\$10.00</u>	<u>\$/hour</u>	_____
=	\$181.54	\$ /acre	_____

Establish years 2 - 4

	1.5	hrs/ac mowing	_____
+	4.0	hrs/ac monitoring	_____
x	4	years	_____
x	<u>\$10.00</u>	<u>\$/hour</u>	_____
=	\$220.00	\$ /acre	_____

Total Labour Costs

=	\$401.54	\$ /acre	_____
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1.07 Irrigation Fuel Costs

Inches applied	0
Hours per acre for 1' of water	0.0
Hourly pumping costs	\$0.00

1.08 Custom & Rental Operations

Reefer rental	\$500.00
Feefer other costs	\$310.00

1.07 Repairs & Maintenance

% rate of investment	1.5%
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1.09 Miscellaneous

Advertising	\$0.00
Pales/Baskets	\$100.00
Utilities	\$0.00

Labour Costs (\$/acre)

Rate per hour	\$10.00
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	<u>Hours/acre</u>
Weed Control	0.0
Pest control	0.0
Mowing	1.5
Irrigation	0.0
Harvesting	166.0
Field Operations	<u>1.5</u>
Total Labour Hours	169.0

1.07 Irrigation Fuel Costs

Inches applied	0
Hours per acre for 1' of water	0.0
Hourly pumping costs	\$0.00

1.08 Custom & Rental Operations

Reefer rental	\$500.00
Feefer other costs	\$310.00

1.07 Repairs & Maintenance

% rate of investment	1.5%
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1.09 Miscellaneous

Advertising	\$0.00
Pales/Baskets	\$100.00
Utilities	\$0.00

Labour Costs (\$/acre)

Rate per hour	\$10.00
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Hours/acre

Weed Control	0.0
Pest control	0.0
Mowing	1.5
Irrigation	0.0
Harvesting	166.0
Field Operations	<u>1.5</u>
Total Labour Hours	169.0