Guidelines for Estimating
Bison Bull Backgrounding Costs
2017
in Manitoba

Manitoba

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Guidelines For Estimating

Bison Bull Backgrounding Costs

For Weight Range of 480 - 800 lbs

Based on 300 Head

Date: **July, 2017**

This guide is designed to provide you with planning information and a format for calculating costs of production of a bison bull backgrounding enterprise in Manitoba. General Manitoba Agriculture recommendations are assumed in using feed and veterinary inputs. These figures provide an economic evaluation of the livestock and estimated prices required to cover all costs. Costs include labour, investment and depreciation, but do not include management costs, nor do they necessarily represent the average cost of production in Manitoba.

Backgrounding generally refers to the feeding of calves from weaning until they are put onto a high concentrate finishing ration. An example of a typical backgrounding operation would be, feed 480 pound bulls to gain 1.25 to 2.0 pounds per day for approximately 100-200 days to produce 750 to 850 pound backgrounded feeders.

These budgets may be adjusted by putting in your own figures. As a producer you are encouraged to calculate your own costs of production. Good management is assumed in that a balanced ration is being fed, livestock are on a herd health program and handling facilities are included.

This tool is available as an Excel worksheet at: 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.

Bison Bull Backgrounding Production Cost Summary July, 2017

Based on 300 feeders, weight range 480 to 800 lbs, @ 1.45 lbs. ADG

A. Operating Costs	Cost/Head	Total Cost	Your Cost
1. Feed Costs			
1.01 Forage	$56.56	$16,968	
1.02 Grain/Concentrate	$31.15	$9,345	
1.03 Salt & Minerals	$5.28	$1,585	
Total Feed Costs	**$92.99**	**$27,898**	
2. Other Operating Costs			
2.01 Feeder Cost	$2,673.71	$802,112	
2.02 Straw	$3.00	$900	
2.03 Pasture Costs	$151.20	$45,360	
2.04 Veterinary Medicine & Supplies	$9.44	$2,832	
2.05 Annual Fuel & Repair Costs	$11.35	$3,406	
2.06 Utilities	$3.43	$1,029	
2.07 Trucking Costs	$15.00	$4,500	
2.08 Insurance	$14.24	$4,272	
2.09 Manure Removal	$7.93	$2,378	
2.10 Barn & Office Supplies	$4.67	$1,401	
2.11 Death Loss	$42.34	$12,702	
Subtotal Operating Costs	$3,029.30	$908,790	
2.12 Operating Interest	$76.85	$23,056	
Total Operating Costs	**$3,106.15**	**$931,846**	
B. Fixed Costs			
3. Depreciation			
3.01 Buildings	$13.83	$4,149	
3.02 Equipment	$4.27	$1,281	
3.03 Machinery	$14.04	$4,212	
4. Investment			
4.01 Buildings	$3.11	$933	
4.02 Machinery & Equipment	$4.38	$1,314	
Total Fixed Costs	**$39.63**	**$11,889**	
Total Operating and Fixed Costs	**$3,145.78**	**$943,735**	
C. Labour	**$60.00**	**$18,000**	
Total Cost of Production	**$3,205.78**	**$961,735**	

Profitability and Breakeven Analysis

Estimated Farmgate	Per Head	Total
Gross Revenue @ $410/cwt market price	**$3,148.80**	**$944,640**
Operating Expense Ratio	**98.6%**	

	Breakeven Purchase Price ($/cwt) @ $410/cwt market price	Breakeven Selling Price ($/cwt) @ $555/cwt feeder price	
Operating Costs	$565.91	$404.45	
Operating Costs & Labour	$553.41	$412.26	
Operating & Fixed Costs	$557.65	$409.61	
Total Costs	$545.15	$417.42	

	Cost per lb of gain sold ($/cwt)	Marginal Returns per head @ $410/cwt market price	
Feed Costs	$32.29	$382.10	
Operating Costs	$150.16	$42.65	
Operating Costs & Labour	$170.99	($17.35)	
Operating & Fixed Costs	$163.92	$3.02	
Total Costs	$184.75	($56.98)	

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Risk & Sensitivity Analysis (Stress Test)

Percent Market Price Change	**-10.0%**
Percent Feed Cost Change	**10.0%**
Percent Feeder Cost Change	**5.0%**

	Per Head
Market Price ($ per cwt)	$369.00
Feed Cost	$102.29
Feeder Cost	$2,807.39

Stress Test Scenario = Market Price Down 10%, Feed Price Up 10% and Feeder Cost Up 5%

Operating Costs	$3,249.14
Total Costs	$3,348.77
Gross Revenue / feeder	$2,833.92
Marginal Returns	
Over Operating Costs	($415.22)
Over Operating & Labour Costs	($475.22)
Over Total Costs (Net Profit)	($514.85)
Operating Expense Ratio	114.7%

Estimated Breakeven Canadian Dollar Analysis*

	Est. Market Price ($/cwt Cdn) @ 0.7700 Cdn per USD				
	$400.00	**$405.00**	**$410.00**	**$415.00**	**$420.00**
Breakeven CDN Dollar ($1 Cdn = $ USD)					
Operating Costs	0.7615	0.7711	0.7806	0.7901	0.7996
Operating & Labour Costs	0.7471	0.7564	0.7658	0.7751	0.7845
Operating, Fixed & Labour Costs	0.7379	0.7471	0.7563	0.7655	0.7748

Breakeven Canadian Dollar = (Est. Market Price ($/lb) x Shrunk Wt. (lbs) x $ Cdn per USD) / Cost
(eg. ($4.10 x 768 lbs x $0.7700) / $3205.78) = $0.7563

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Bison Bull Backgrounding Costs - Input

Herd Profile

Number of Feeders Purchased		**300**	head
Feeder Bull Mortality Rate		**1.50**	%
Feeder Purchased Weight		**480**	lbs
Feeder Bull Price		**$555.00**	/cwt
Finish Weight		**800**	lbs
Feeder Selling Price		**$410.00**	/cwt
Percent Shrink Off- feeder		**4.00**	%
Percent Shrink On- calf		**0.00**	%
Average Daily Gain		**1.45**	lbs/day
Dressing Percentage		**0.00**	%
$1 Canadian Dollar	($1.2987 CDN)	**$0.7700**	/ $1 USD
Days On Feed		**221**	days
Days on Pasture		**120**	days
Days on Feed in Feedlot		**101**	days
Total Feed Cost per Bull		$92.99	
Average Feed Cost per Day		$0.92	
Feed Cost per lb. of Gain Sold (shrunk weight)		$0.323	
Total Pounds of Gain		320	
Total Pounds of Gain (Shrunk Weight)		288	

Footnote: 1 kilogram (kg) = 2.2046 pounds (lbs)

Feed Costs	Cost		Feeder Bison Requirement	
Grass Hay	**$70.00**	/ton	**16.00**	lbs/day
Other Forage	**$0.00**	/ton	**0.00**	lbs/day
Silage	**$0.00**	/ton	**0.00**	lbs/day
Grain/concentrate	**$0.088**	/lb	**3.50**	lbs/day
Salt	**$0.14**	/lb	**3.50**	lbs/year
Mineral	**$0.51**	/lb	**9.40**	lbs/year

Pasture Costs cost / day **$1.26**

Other Operating Costs

Straw

Annual Requirement	**0.100**	tonnes/feeder
Cost	**$30.00**	/tonne

Veterinary Medicine & Supplies

Feeder Medication		
Blackleg (8 way vaccine)	**$0.83**	/feeder
Vitamin	**$0.00**	/feeder
Parasite Control	**$7.60**	/feeder
Herd Health Program		
Professional Services		
Total Yearly Hours	**1**	hours
Rate	**$175.00**	/hour
Transportation		
Total Distance (round trip)	**160**	km
Charge per km	**$0.80**	
Number of yearly visits	**1**	

Annual Fuel & Repair Costs

a) Machinery Fuel Costs - Winter Feeding		
Tractor with Loader PTO hp	**120**	
Diesel Fuel Cost	**$0.85**	/litre
Tractor Hours Per Day (average)	**1.00**	hours
b) Machinery Repair (% of investment cost)	**1.00**	%
c) Building & fence repair (% of investment cost)	**2.00**	%

Utilities

- Rate	**$0.0793**	/ kWh
12 kWh per feeder	**$285.48**	
1 1000 watt waterer	**$144.17**	
Total Hydro	**$429.65**	
Water	**$0.00**	
Telephone	**$600.00**	

Trucking to Feedlot

Distance to packing plant	**150**	miles
Trucking cost	**$5.50**	/loaded mile
Number of head per load	**85**	

Trucking Cost

Trucking cost	Rate/loaded mile	**$5.50**	/loaded mile
	Milage, distance to market	**150**	miles
	Truck capacity # head	**55**	head

Manure Removal

Manure volume produced	**0.024**	m^3/feeder/day
Manure volume shrinkage	**75**	%
Cost for manure removal & application	**$10.00**	/cubic yard

Insurance		
Cost per $100 Capital Invested in:		
Livestock	**$0.45**	
Buildings & Equipment	**$0.40**	
Additional Coverage for Liability	**$49.00**	
Barn & Office Supplies		
Total yearly expense relating to barn	**$1,400.00**	
Operating Interest Rate	**4.50**	%
Investment Interest Rate	**2.25**	%

Footnote: cwt = hundred-weight = 100 lbs

Capital Costs

	Original Value	Salvage Value	Useful Life
Handling Facilities			
Land & Landscaping	**$10,000**		
Waterers	**$6,000**		
Squeeze, Gates & Scale	**$20,000**		
Well & Pressure System	**$5,000**		
Pens (Working & Sorting)	**$42,000**		
Total Building Cost	**$83,000**	**0** %	**20** years
Equipment			
Self Feeder	**$27,000**		
Hay Feeders	**$2,500**		
Miscellaneous	**$2,500**		
Total Equipment Cost	**$32,000**	**0** %	**25** years
Machinery			
Tractors & Loader ($180,000 @ 30%)	**$54,000**	**20** %	**15** years
Miscellaneous	**$20,000**	**20** %	**10** years
Total Capital Investment	**$189,000**		

Labour Costs

Hours	**3.0**	head/year
Wage	**$20.00**	/hour

Bison Bull Backgrounding Cost Worksheet
Based on 300 head

Assumptions

1. This budget assumes the weaning and/or purchase weight of bison bull calves to be approximately 480 lbs and finish weight to be 800 lbs.

2. This budget assumes a shrink of 4 %. Shrunk Weight weight = 768 lbs.

3. Average Daily Gain = 1.45 lbs per day.

4. Time frame from start to finish is approximately 221 days, 101 days backgrounding ration and 120 days pasture.

5. Grain ration if used is prepared (minerals and salt included).

6. This budget is based an a backgrounding enterprise of 300 bulls.

A. Operating Costs

				Your Cost
1. Feed Costs				
1.01 Forage				
Grass Hay		101	days on feed	
	x	16.0	lbs/feeder/day	
	x	$0.035	/lb	
	=	$56.56	/feeder	
Silage		101	days on feed	
	x	0.0	lbs/feeder/day	
	x	$0.00	/lb	
	=	$0.00	/feeder	
Other forage		101	days on feed	
	x	0.0	lbs/feeder/day	
	x	$0.00	/lb	
	=	$0.00	/feeder	
	=	**$56.56**	**/feeder**	
1.02 Grain/Concetrate				
		101	days on feed	
	x	3.5	lbs/feeder/day	
	=	0.177	tons fed	
	x	$0.088	/lb	
	=	**$31.15**	**/feeder**	

				Your Cost
1.03 Salt & Minerals				
		3.5	lbs salt/year	
	x	$0.14	$/lb	
	=	$0.49	/feeder	
		9.4	lbs mineral/year	
	x	$0.51	$/lb	
	=	$4.79	/feeder	
	=	**$5.28**	**/feeder**	
2. Other Operating Costs				
2.01 Feeder Bison Cost				
		480	lbs/feeder	
	x	$555.00	/cwt	
	÷	100	lbs/cwt	
	=	$2,664.00	/feeder	
		150	miles	
	x	$5.50	$/loaded mile	
	÷	85	head load capacity	
	=	$9.71	/feeder	
	=	**$2,673.71**	**/feeder**	
2.02 Straw				
		0.10	tonnes/feeder/year	
	x	$30.00	/tonne	
	=	**$3.00**	**/feeder**	
2.03 Pasture Costs				
		$1.26	$/head/day	
	x	120	days on pasture	
	=	**$151.20**	**/feeder**	
2.04 Veterinary Medicine & Supplies				
Medication				
		$0.83	blackleg	
	+	$0.00	vitamin	
	+	$7.60	parasite control	

				Your Cost
	=	$8.43	/feeder	
Herd health program				
		$175.00	/hour charge	
	x	1.0	hours	
	÷	300	feeders	
	=	$0.58	/feeder	
Mileage				
		$0.80	/km charge	
	x	160	kilometres	
	x	1	visits	
	÷	300	feeders	
	=	$0.43	/feeder	
Total	**=**	**$9.44**	**/feeder**	

2.05 Annual Fuel & Repair Costs

Machinery fuel cost				
		120	PTO hp	
	÷	2.5	avg HP required	
	x	0.1665576	litres fuel/hour/hp	
	x	1.0	hours per day	
	x	$0.85	diesel / litre	
	x	101	days on feed	
		$686.35	annual fuel cost	
	÷	300.00	feeders	
	=	$2.29	/feeder	
Machinery repair & maintenance				
		$106,000	machinery capital cost	
	x	1.00	% repair rate	
	=	$1,060.00	oil, repairs & maintenance	
	÷	300.00	feeders	
	=	$3.53	/feeder	
Building & fence repair				
		$83,000	building capital cost	
	x	2.00	% repair rate	
	=	$1,660.00	oil, repairs & maintenance	
	÷	300.00	feeders	
	=	$5.53	/feeder	
Total	**=**	**$11.35**	**/feeder**	

				Your Cost
2.06 Utilities				
		$1,030	cost/year	
	÷	300	feeders	
	=	**$3.43**	**/feeder**	
2.07 Trucking Costs				
		$5.50	$/loaded mile	
	x	150	distance miles	
	÷	55	head load capacity	
	=	**$15.00**	**/feeder**	
2.08 Insurance				
		$169,000	building & equipment investment	
	x	$0.40	cost/$100 capital	
	÷	100		
	÷	300	feeders	
	=	$2.25	/feeder	
		$2,664	feeder investment	
	x	$0.45	cost/$100 capital	
	÷	100		
	=	$11.99	/feeder	
Total	=	**$14.24**	**/feeder**	
2.09 Manure Removal				
	=	101	days on feed	
	x	0.024	m^3/feeder/day	
	=	2.42	m^3 manure volume	
	x	75	% volume shrink	
	x	1.30795	yd^3 per m^3	
	x	$10.00	yd^3 manure removal cost	
	=	**$7.93**	**/feeder**	
2.10 Barn & Office Supplies				
		$1,400	total barn expenses	
	÷	300	feeders	
	=	**$4.67**	**/feeder**	
2.11 Death Loss				
		$2,673.71	feeder cost	

			Your Cost
+	$2,986.96	maximum value	
-	$15.00	marketing costs	
÷	2.00	average value	
x	1.5	% mortality	
=	**$42.34**	**/feeder**	

2.12 Operating Interest

	$2,664.00	feeder cost	
+	$156.63	½ of feed & other costs	
x	4.50	% operating interest	
x	221	days on feed	
÷	365	365 days per year	
=	**$76.85**	**/feeder**	

Capital Investment

Handling Facilities		
Land & Landscaping	**$10,000**	
Waterers	**$6,000**	
Squeeze, Gates & Scale	**$20,000**	
Well & Pressure System	**$5,000**	
Pens (Working & Sorting)	**$42,000**	
Total Building Cost	**$83,000**	
Machinery & Equipment		
Self Feeder	**$27,000**	
Hay Feeders & Miscellaneous	**$2,500**	
Miscellaneous	**$2,500**	
Tractor & Loader	**$54,000**	
Miscellaneous	**$20,000**	
Total	**$106,000**	
Total Capital Investment	**$189,000**	

B. Fixed Costs

3. Depreciation

$$\frac{\textit{Original Cost - Salvage Value}}{\textit{Useful Life}}$$

3.01 Buildings

$83,000	original value	

			Your Cost
-	$0	salvage value	
÷	20	years useful life	
÷	300	feeders	
=	**$13.83**	**/feeder**	

3.02 Equipment

	$32,000	original value	
-	$0	salvage value	
÷	25	years useful life	
÷	300	feeders	
=	**$4.27**	**/feeder**	

3.03 Machinery

	$74,000	original value	
-	$10,800	salvage value	
÷	15	years useful life	
÷	300	feeders	
=	**$14.04**	**/feeder**	

4. Investment

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

4.01 Buildings

	$83,000	total building value	
+	$0	salvage value	
÷	2	average	
x	2.25	% investment interest	
÷	300	feeders	
=	**$3.11**	**/feeder**	

4.02 Machinery & Equipment

	$106,000	original value	
+	$10,800	salvage value	
÷	2	average	
x	2.25	% investment interest	
÷	300	feeders	
=	**$4.38**	**/feeder**	

C. Labour

	3.0	hours/feeder/year	
x	$20.00	/hour	
=	**$60.00**	**/feeder**	

Breakeven Calculations

Cost per lb of gain sold (shrunk weight)

Feed Costs		$92.99	feed cost
	÷	288	lbs gained weight
	=	**$0.32**	**/lb (gain sold)**
Operating Costs		$3,106.15	operating costs
	-	$2,673.71	feeder cost
	÷	288	lbs gained weight
	=	**$1.50**	**/lb (gain sold)**
Operating & Labour Costs		$3,166.15	operating costs
	-	$2,673.71	feeder cost
	÷	288	lbs gained weight
	=	**$1.71**	**/lb (gain sold)**
Operating & Fixed		$3,145.78	oper. & fixed costs
	-	$2,673.71	feeder cost
	÷	288	lbs gained weight
	=	**$1.64**	**/lb (gain sold)**
Total Costs		$3,205.78	total costs
	-	$2,673.71	feeder cost
	÷	288	lbs gained weight
	=	**$1.85**	**/lb (gain sold)**

Breakeven selling price (shrunk weight)

Operating Costs		$3,106.15	operating costs
	÷	768	lbs shrunk weight
	=	**$4.04**	**/lb**
Operating & Labour Costs		$3,166.15	operating & labour
	÷	768	lbs shrunk weight
	=	**$4.12**	**/lb**
Operating & Fixed		$3,145.78	oper. & fixed costs
	÷	768	lbs shrunk weight
	=	**$4.10**	**/lb**
Total Costs		$3,205.78	total costs
	÷	768	lbs shrunk weight
	=	**$4.17**	**/lb**

Breakeven purchase price (shrunk weight)

Operating Costs		768	lbs shrunk weight
	x	$410.00	$/cwt selling price
	=	$3,148.80	income
	-	$432.45	operating less feeder cost
	÷	480	lbs purchase weight

	=	**$5.66**	**/lb**	
Operating & Labour Costs		768	lbs shrunk weight	
	x	$410.00	$/cwt selling price	
	=	$3,148.80	income	
	-	$492.45	operating less feeder cost	
	÷	480	lbs purchase weight	
	=	**$5.53**	**/lb**	
Operating & Fixed		768	lbs shrunk weight	
	x	$410.00	$/cwt selling price	
	=	$3,148.80	income	
	-	$472.08	op. & fixed less feeder cost	
	÷	480	lbs purchase weight	
	=	**$5.58**	**/lb**	
Total Costs		768	lbs shrunk weight	
	x	$410.00	$/cwt selling price	
	=	$3,148.80	income	
	-	$532.08	total less feeder cost	
	÷	480	lbs purchase weight	
	=	**$5.45**	**/lb**	

Created and maintained by Manitoba Agriculture Farm Management **July, 2017**

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For more information

- Contact your local Manitoba Agriculture Office.
- Visit us at **manitoba.ca/agriculture**.

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