

Guidelines for Estimating Improved & Unimproved Pasture Production Costs

Date: January, 2007

Forage crops comprise approximately 36% of the agricultural land base in Manitoba. With the change in agricultural markets, there is a greater interest in the use of marginal cropland for forage production and the harvesting of that forage by grazing livestock.

The technology of grassland management has changed in recent years with the adoption of rotational grazing systems, use of improved pasture forage species and livestock marketing systems that can reduce risk to the grass manager.

Stocking rates are a critical aspect of any grazing system. This budget takes into account options to consider when calculating the stocking rate or Animal Unit Months (AUM) for your soil type and climatic conditions.

Pasture costs and returns must be carefully calculated so that a comparison is possible with other crop options for the land base. This Pasture Cost Guideline should provide an outline for producers to determine their costs of a grazing system.

Disclaimer: 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. If you require assistance with developing your individual budget, please contact your local Manitoba Agriculture, Food and Rural Initiatives office.

Improved Pasture Cost of Production Summary

	<u>\$/Acre</u>	<u>Season \$/head</u>	<u>Daily \$/head</u>	<u>Your Cost</u>
A. Operating Costs				
1.01 Land Development	\$7.56	\$9.82	\$0.07	_____
1.02 Fertilizer	\$20.19	\$26.22	\$0.20	_____
1.03 Herbicide	\$2.56	\$3.32	\$0.03	_____
1.04 Fuel & Repairs	\$4.38	\$5.69	\$0.04	_____
1.05 Land Taxes	\$3.50	\$4.55	\$0.03	_____
1.06 Miscellaneous	<u>\$0.00</u>	<u>\$0.00</u>	<u>\$0.00</u>	_____
Sub-total Operating Cost	\$38.19	\$49.60	\$0.37	_____
1.07 Interest on Operating	<u>\$1.24</u>	<u>\$1.61</u>	<u>\$0.01</u>	_____
Total Operating Costs	\$39.43	\$51.21	\$0.38	_____
B. Fixed Costs				
2.0 Investment				
2.01 Land	\$12.00	\$15.58	\$0.12	_____
2.02 Facilities	\$1.44	\$1.87	\$0.01	_____
2.03 Machinery	\$0.00	\$0.00	\$0.00	_____
3.0 Depreciation				
3.01 Facilities	\$3.59	\$4.66	\$0.04	_____
3.02 Machinery	<u>\$0.00</u>	<u>\$0.00</u>	<u>\$0.00</u>	_____
Total Fixed Costs	\$17.03	\$22.11	\$0.17	_____
Total Operating and Fixed	\$56.46	\$73.32	\$0.55	_____
C. Labour	\$2.41	\$3.13	\$0.02	_____
Total Cost of Production	\$58.87	\$76.45	\$0.57	_____

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Unimproved Pasture Cost of Production Summary

	<u>\$/Acre</u>	<u>Season \$/head</u>	<u>Daily \$/head</u>	<u>Your Cost</u>
A. Operating Costs				
1.01 Land Development	\$0.00	\$0.00	\$0.00	_____
1.02 Fertilizer	\$2.81	\$12.22	\$0.09	_____
1.03 Herbicide	\$1.00	\$4.35	\$0.03	_____
1.04 Fuel & Repairs	\$4.38	\$19.04	\$0.14	_____
1.05 Land Taxes	\$2.00	\$8.70	\$0.07	_____
1.06 Miscellaneous	<u>\$0.00</u>	<u>\$0.00</u>	<u>\$0.00</u>	_____
Sub-total Operating Cost	\$10.19	\$44.30	\$0.34	_____
1.07 Interest on Operating	<u>\$0.33</u>	<u>\$1.43</u>	<u>\$0.01</u>	_____
Total Operating Costs	\$10.52	\$45.74	\$0.35	_____
B. Fixed Costs				
2.0 Investment				
2.01 Land	\$5.00	\$21.74	\$0.16	_____
2.02 Facilities	\$1.06	\$4.61	\$0.03	_____
2.03 Machinery	\$0.00	\$0.00	\$0.00	_____
3.0 Depreciation				
3.01 Facilities	\$2.66	\$11.57	\$0.09	_____
3.02 Machinery	<u>\$0.00</u>	<u>\$0.00</u>	<u>\$0.00</u>	_____
Total Fixed Costs	\$8.72	\$37.91	\$0.29	_____
Total Operating and Fixed	\$19.24	\$83.65	\$0.63	_____
C. Labour	\$2.41	\$10.46	\$0.08	_____
Total Cost of Production	\$21.65	\$94.11	\$0.71	_____

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Improved Pasture Cost of Production Assumptions

Land

Total Acres	160 acres
Market Value (excluding fence)	\$48,000
Market Value per acre	\$300.00 \$/acre
Grazing period	
Days	132 days
Months	4.4 months

Animal Unit Month (AUM) Available per Acre					
Vegetative Associations		Soil Groups			
		Light	Medium	Heavy	
		2	3	4	
Bush	Woodland	1	0.2	0.4	0.5
	Open woodland	2	0.4	0.6	0.8
	Harvested woodland	3	0.6	0.8	0.9
	Boreal forest	4	0.0	0.0	0.0
Meadow	Upland grass	5	0.8	1.2	1.0
	Transitional grassland	6	1.2	1.2	1.4
	Lowland meadow	7	1.6	1.8	1.8
Improved	Hay regrowth	8	0.5	0.8	1.0
	Poor tame forage	9	1.4	1.4	1.6
	Fair tame forage	10	2.0	2.8	3.0
	Good tame forage	11	3.5	4.0	5.0
Annual	Annual crop land	12	0.0	3.0	3.0
	Crop stubble	13	0.0	0.5	0.5
	Fall seeded cereal	14	0.0	1.6	1.6

Source Manitoba Crown Lands

Estimated Carrying Capacity: Pick the soil group and vegetative association (from the table above) that most closely represents your land.

Soil Group (2-4) **3** Veg. Assoc. (1-14) **11**
 Estimated average weight on pasture **1188** lbs

Carrying Capacity

Number of head pastured/season (see detailed calculations on page 16)	122
Number of head pastured/acre	0.77
Pounds liveweight per acre	915
Total pounds on pasture	146,362

Improved Pasture Cost of Production Worksheet

A. Operating Costs				<u>Your Cost</u>
1.01 Land Development				
Seed Costs	12.0	alfalfa grass mix lbs/acre		_____
x	\$3.00	\$/lb		_____
+	\$4.50	\$/acre custom seeding		_____
\div	<u>8</u>	<u>years of production</u>		_____
=	\$5.06	/acre		_____
Land Preparation	\$20.00	breaking		_____
+	\$0	clearing		_____
\div	<u>8</u>	<u>years of production</u>		_____
=	\$2.50	/acre		_____
Total	= \$7.56	/acre		_____
1.02 Fertilizer				
Nitrogen seeding	20.0	lbs nitrogen seeding year		_____
x	\$0.50	cost/lb		_____
\div	<u>8</u>	<u>years of production</u>		_____
=	\$1.25	/acre		_____
cropping	30.0	lbs nitrogen cropping years		_____
x	\$0.50	cost/lb		_____
x	80	acres annually		_____
\div	<u>160</u>	<u>total acres</u>		_____
=	\$7.50	/acre		_____
Total	= \$8.75	/acre		_____
Phosphate seeding	35	lbs phosphate seeding year		_____
x	\$0.43	cost/lb		_____
\div	<u>8</u>	<u>years of production</u>		_____
=	\$1.88	/acre		_____
cropping	30	lbs phosphate cropping years		_____
x	\$0.43	cost/lb		_____
x	80	acres annually		_____
\div	<u>160</u>	<u>total acres</u>		_____
=	\$6.45	/acre		_____

Total	=	\$8.33	/acre	_____
Potash seeding		10	lbs potash seeding year	_____
	x	\$0.24	cost/lb	_____
	÷	<u>8</u>	<u>years of production</u>	_____
	=	\$0.30	/acre	_____
cropping		0	lbs potash cropping years	_____
	x	\$0.24	cost/lb	_____
	x	80	acres annually	_____
	÷	<u>160</u>	<u>total acres</u>	_____
	=	\$0.00	/acre	_____
Total	=	\$0.30	/acre	_____
Sulfur seeding		0	lbs sulfur seeding year	_____
	x	\$0.26	cost/lb	_____
	÷	<u>8</u>	<u>years of production</u>	_____
	=	\$0.00	/acre	_____
cropping		0	lbs sulfur cropping years	_____
		\$0.26	cost/lb	_____
	x	80	acres annually	_____
	÷	<u>160</u>	<u>total acres</u>	_____
	=	\$0.00	/acre	_____
Total	=	\$0.00	/acre	_____
Custom Application Cost				
Seeding		\$4.50	\$/acre custom cost	_____
	÷	<u>8</u>	<u>years of production</u>	_____
	=	\$0.56	/acre	_____
Cropping		\$4.50	\$/acre custom cost	_____
	x	80	acres applied	_____
	÷	<u>160</u>	<u>total acres</u>	_____
	=	\$2.25	/acre	_____
Total	=	\$2.81	/acre	_____

Total	\$20.19	/acre	_____
1.03 Herbicide			
Seeding	\$12.50	\$/acre (includes application)	_____
÷	<u>8</u>	<u>years of production</u>	_____
=	\$1.56	Cost/year	_____
Pasture	\$1.00	Spot spray	_____
Total =	\$2.56	/acre	_____
1.04 Maintenance & Repairs			
	\$500.00	machinery	_____
+	\$200.00	fence	_____
÷	<u>160</u>	<u>total acres</u>	_____
=	\$4.38	/acre	_____
1.05 Land Taxes			
=	\$3.50	/acre	_____
1.06 Miscellaneous			
=	\$0.00	/acre	_____
1.07 Interest on operating costs			
	\$38.19	subtotal operating	_____
÷	2	average	_____
x	<u>6.5</u>	<u>% interest rate</u>	_____
=	\$1.24	/acre	_____

Capital Costs

Land		
160 acres @ \$300	\$48,000	_____
Facilities		
Handling facilities	\$3,000	_____
Fence Cost	\$5,000	_____
Water Development	<u>\$3,500</u>	_____
Total Facilities	\$11,500	_____
Total Investment	\$59,500	_____

B. Fixed Costs

2. Investment

2.01 Land

	\$300.00	cost/acre	_____
x	<u>4.0</u>	<u>% investment rate</u>	_____
=	\$12.00	/acre	_____

2.02 Facilities

	\$11,500	facilities investment	_____
+	\$0	salvage value	_____
÷	2	average	_____
÷	160	acres	_____
<u>x</u>	<u>4</u>	<u>% investment rate</u>	_____
=	\$1.44	/acre	_____

2.03 Machinery

	\$0	machinery investment	_____
+	\$0	salvage value	_____
÷	2	average	_____
÷	160	acres	_____
x	<u>4.0</u>	<u>% investment rate</u>	_____
=	\$0.00	/acre	_____

Depreciation

3.01 Facilities

	\$11,500	facilities investment	_____
-	\$0	salvage value	_____
÷	20	useful life	_____
÷	<u>160</u>	<u>acres</u>	_____
=	\$3.59	/acre	_____

3.02 Machinery

	\$0	machinery investment	_____
-	\$0	salvage value	_____
÷	13	useful life	_____
÷	<u>160</u>	<u>acres</u>	_____
=	\$0.00	/acre	_____

C. Labour Cost

	35.0	hours/season	_____
x	\$11.00	rate/hour	_____
÷	<u>160</u>	<u>acres</u>	_____
=	\$2.41	/acre	_____

Unimproved Pasture Cost of Production Assumptions

Land

Total Acres		160 acres
Market Value (excluding fence)		\$20,000
Market Value per acre		\$125.00 \$/acre
Grazing period		
	Days	132 days
	Months	4.4 months

Animal Unit Month (AUM) Available per Acre					
Vegetative Associations		Soil Groups			
		Light	Medium	Heavy	
		2	3	4	
Bush	Woodland	1	0.2	0.4	0.5
	Open woodland	2	0.4	0.6	0.8
	Harvested woodland	3	0.6	0.8	0.9
	Boreal forest	4	0.0	0.0	0.0
Meadow	Upland grass	5	0.8	1.2	1.0
	Transitional grassland	6	1.2	1.2	1.4
	Lowland meadow	7	1.6	1.8	1.8
Improved	Hay regrowth	8	0.5	0.8	1.0
	Poor tame forage	9	1.4	1.4	1.6
	Fair tame forage	10	2.0	2.8	3.0
	Good tame forage	11	3.5	4.0	5.0
Annual	Annual crop land	12	0.0	3.0	3.0
	Crop stubble	13	0.0	0.5	0.5
	Fall seeded cereal	14	0.0	1.6	1.6

Source Manitoba Crown Lands

Estimated Carrying Capacity: Pick the soil group and vegetative association (from the table above) that most closely represents your land.

Soil Group (2-4)	3	Veg. Assoc. (1-14)	5	
Estimated average weight on pasture			1188 lbs	1.20
Carrying Capacity				
Number of head pastured/season			37	192
Number of head pastured/acre			0.23	1.188
Pounds liveweight per acre			273	162
Total pounds on pasture			43,718	36.73095

Seed Costs	Grass seed cost per lb	\$0.00
	Seeding rate(lbs/acre)	0.0
	Custom seeding cost (\$/acre)	\$0.00
	Years	8 years

Land Preparation (total costs)		
	Breaking	\$0
	Clearing	\$0
	years	8 years

1.02 Fertilizer		Seeding	Producing
	\$/lb	lbs/acre	Years
		lbs/acre	lbs/acre

Nitrogen	\$0.50	0	0
Phosphate	\$0.43	0	0
Potassium	\$0.24	0	0
Sulfur	\$0.26	0	0
application cost	\$4.50 /acre		
average acres annually	80 acres		

1.03 Herbicide (includes application costs)

Seeding		\$0.00 \$/acre
Producing Years	Spot spray	\$1.00 \$/acre

1.04 Maintenance & Repairs (total cost/year)

Machinery	\$500.00 \$/year
Fence Maint & Repairs	\$200.00 \$/year

1.06 Land Taxes

Cost per acre	\$2.00 \$/acre
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1.07 Miscellaneous (\$/acre)

Seeding	\$0.00 \$/acre
Pasture (eg renovation costs)	\$0.00 \$/acre

1.08 Interest

Interest on Operating	6.5 %
Investment interest rate	4.0 %

Capital Costs

<u>Machinery</u>	<u>Market Value</u>	<u>% Usage Pasture</u>	<u>Allocated Value</u>	<u>Useful Life Yrs</u>	<u>Salvage Value %</u>
Tractors	\$0	20	\$0	7	10
Seed drill	\$0	20	\$0	15	10
Harrows	\$0	20	\$0	20	10
Other	\$0	20	\$0	10	10
Total Machinery			\$0	13	10

Land Investment

Land cost /acre	\$125
Total Acres	160
Total Land	\$20,000

Other facilities

Handling facilities	\$1,500	20	0
Fence Cost	\$5,000	20	0
Water Development	\$2,000	20	0
Total Handling	\$8,500	20	0

Total Capital Investment \$28,500

C. Labour

total hours/season	35.0
rate per hour	\$11.00

Unimproved Pasture Cost of Production Worksheet

A. Operating Costs				<u>Your Cost</u>
1.01 Land Development				
Seed Costs		0.0	alfalfa grass mix lbs/acre	_____
	x	\$0.00	\$/lb	_____
	+	\$0.00	\$/acre custom seeding	_____
	÷	<u>8</u>	<u>years of production</u>	_____
	=	\$0.00	/acre	_____
Land Preparation		\$0	breaking	_____
	+	\$0	clearing	_____
	÷	<u>8</u>	<u>years of production</u>	_____
	=	\$0.00	/acre	_____
Total	=	\$0.00	/acre	_____
1.02 Fertilizer				
Nitrogen seeding		0.0	lbs nitrogen seeding year	_____
	x	\$0.50	cost/lb	_____
	÷	<u>8</u>	<u>years of production</u>	_____
	=	\$0.00	/acre	_____
cropping		0.0	lbs nitrogen cropping years	_____
	x	\$0.50	cost/lb	_____
	x	80	acres annually	_____
	÷	<u>160</u>	<u>total acres</u>	_____
	=	\$0.00	/acre	_____
Total	=	\$0.00	/acre	_____
Phosphate seeding		0	lbs phosphate seeding year	_____
	x	\$0.43	cost/lb	_____
	÷	<u>8</u>	<u>years of production</u>	_____
	=	\$0.00	/acre	_____
cropping		0	lbs phosphate cropping years	_____
	x	\$0.43	cost/lb	_____
	x	80	acres annually	_____
	÷	<u>160</u>	<u>total acres</u>	_____
	=	\$0.00	/acre	_____
Total	=	\$0.00	/acre	_____

Potash seeding		0	lbs potash seeding year	_____
	x	\$0.24	cost/lb	_____
	÷	<u>8</u>	<u>years of production</u>	_____
	=	\$0.00	/acre	_____
cropping		0	lbs potash cropping years	_____
	x	\$0.24	cost/lb	_____
	x	80	acres annually	_____
	÷	<u>160</u>	<u>total acres</u>	_____
	=	\$0.00	/acre	_____
Total	=	\$0.00	/acre	_____
Sulfur seeding		0	lbs sulfur seeding year	_____
	x	\$0.26	cost/lb	_____
	÷	<u>8</u>	<u>years of production</u>	_____
	=	\$0.00	/acre	_____
cropping		0	lbs sulfur cropping years	_____
		\$0.26	cost/lb	_____
	x	80	acres annually	_____
	÷	<u>160</u>	<u>total acres</u>	_____
	=	\$0.00	/acre	_____
Total	=	\$0.00	/acre	_____
Custom Application Cost				
Seeding		\$4.50	\$/acre custom cost	_____
	÷	<u>8</u>	<u>years of production</u>	_____
	=	\$0.56	/acre	_____
Cropping		\$4.50	\$/acre custom cost	_____
	x	80	acres applied	_____
	÷	<u>160</u>	<u>total acres</u>	_____
	=	\$2.25	/acre	_____
Total	=	\$2.81	/acre	_____
Total		\$2.81	/acre	_____

1.03 Herbicide

Seeding	\$0.00	\$/acre (includes application)	_____
÷	8	<u>years of production</u>	_____
=	\$0.00	Cost/year	_____
Pasture	\$1.00	Spot Spray	_____
Total	= \$1.00	/acre	_____

1.04 Maintenance & Repairs

	\$500.00	machinery	_____
+	\$200.00	fence	_____
÷	160	<u>total acres</u>	_____
=	\$4.38	/acre	_____

1.05 Land Taxes

=	\$2.00	/acre	_____
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1.06 Miscellaneous

=	\$0.00	/acre	_____
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1.07 Interest on operating costs

	\$10.19	subtotal operating	_____
÷	2	average	_____
x	6.5	<u>% interest rate</u>	_____
=	\$0.33	/acre	_____

Capital Costs

Land			
160 acres @ \$125 per acre		\$20,000	_____
Facilities			
Handling Facilities		\$1,500	_____
Fence Costs		\$5,000	_____
Water Development		<u>\$2,000</u>	_____
Total Facilities		\$8,500	_____
Total Investment		\$28,500	_____

B. Fixed Costs

2. Investment

2.01 Land

	\$125.00	cost/acre	_____
x	4.0	<u>% investment rate</u>	_____
=	\$5.00	/acre	_____

2.02 Facilities

	\$8,500	facilities investment	_____
+	\$0	salvage value	_____
÷	2	average	_____
÷	160	acres	_____
x	<u>4</u>	<u>% investment rate</u>	_____
=	\$1.06	/acre	_____

2.03 Machinery

	\$0	machinery investment	_____
+	\$0	salvage value	_____
÷	2	average	_____
÷	160	acres	_____
x	<u>4.0</u>	<u>% investment rate</u>	_____
=	\$0.00	/acre	_____

Depreciation

3.01 Facilities

	\$8,500	facilities investment	_____
-	\$0	salvage value	_____
÷	20	useful life	_____
÷	<u>160</u>	<u>acres</u>	_____
=	\$2.66	/acre	_____

3.02 Machinery

	\$0	machinery investment	_____
-	\$0	salvage value	_____
÷	13	useful life	_____
÷	<u>160</u>	<u>acres</u>	_____
=	\$0.00	/acre	_____

C. Labour Cost

	35.0	hours/acre	_____
x	\$11.00	rate/hour	_____
÷	<u>160</u>	<u>acres</u>	_____
=	\$2.41	/acre	_____

For further information contact your local Agriculture and Food Office

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Calculating Pasture Capacity - Number of Head Pastured

	<u>Example</u>	<u>Your Farm</u>
1. Animal Unit Month Available per acre* (see table; soil group 3 veg assoc. 11)	4.0	_____
2. Animal Unit Equivalents** (Average weight of animals ÷ 1000 lbs)	1.188	_____
3. AUM's available per acre for 1 month (1 ÷ 2)	3.37	_____
4. Grazing period in months	4.4	_____
5. AUM's available per acre for total period (3 ÷ 4)	0.77	_____
6. Total Acres in Pasture	160	_____
7. Carrying Capacity of Pasture (# of Head) (5 x 6)	122	_____

* One Animal Unit Month (AUM) is defined as a 1000 lb beef cow, with or without a nursing calf, with a daily requirement of 26 lbs dry matter forage. Therefore 1 AUM is equal to 780 lbs of dry matter forage.

** If calculating requirements for livestock other than a 1000 lb cow divide weight of animal by 1000 lbs to determine animal unit equivalent. In the example above 1,188 was divided by 1000 to calculate the animal unit equivalent.