
2020 Cost of Production
Pasture



Guidelines For Estimating
**Improved & Unimproved
Pasture Production Costs - 2020**

Date: June, 2020

This guide is designed to provide planning information and a format for calculating the costs of improved and unimproved (marginal) grass pasture for the purpose of grazing livestock in Manitoba. General Department recommendations are assumed in using fertilizers and chemical inputs. These figures provide an economic evaluation of pastures and estimated cost per head per day. Costs include operating, investment and depreciation, but do not include management costs, nor do they necessarily represent the average cost of production in Manitoba.

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.

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 your pasture and grazing system. On each farm, costs and yields differ due to soil type, climate and agronomic practices.

This tool is available as an Excel worksheet at: www.manitoba.ca/agriculture
or at your local [Manitoba Agriculture and Resource Development Office](#).
[The Farm Machinery Cost of Production Guide](#) 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 office.

Pasture Production Cost Summary - 2020

	<u>Improved Pasture</u>	<u>Unimproved Pasture</u>
	160 acres	160 acres
	94 head (1.7 ac/hd) @ 1350lbs	32 head (5 ac/hd) @ 1350lbs
	132 Days on Pasture	132 Days on Pasture
Total Animal Unit Months (AUM's)	517	176
Total AUM's - Available Per Acre	3.23	1.10

\$1,500/acre = \$240,000 Total Cost
(\$60,000 loan @ 4%, 25 years = \$3,841 annual pmt)

\$600/acre = \$96,000 Total Cost
(\$24,000 loan @ 4%, 25 years = \$1,536 annual pmt)

	<u>\$/Acre</u>	<u>Season \$/head</u>	<u>Daily \$/head</u>	<u>\$/Acre</u>	<u>Season \$/head</u>	<u>Daily \$/head</u>	<u>Your Cost</u>
A. Operating Costs							
Land Development	\$16.11	\$27.30	\$0.21	\$0.00	\$0.00	\$0.00	_____
Fertilizer - Annual	\$13.98	\$23.69	\$0.18	\$0.00	\$0.00	\$0.00	_____
Herbicide	\$1.00	\$1.69	\$0.01	\$1.00	\$5.00	\$0.04	_____
Fence Maintenance	\$2.11	\$3.58	\$0.03	\$1.40	\$6.98	\$0.05	_____
Facilities Maintenance	\$0.50	\$0.85	\$0.01	\$0.50	\$2.50	\$0.02	_____
Land Taxes	\$8.00	\$13.56	\$0.10	\$4.00	\$20.00	\$0.15	_____
Miscellaneous	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Sub-total Operating Cost	\$41.70	\$70.67	\$0.54	\$6.90	\$34.48	\$0.26	_____
Interest on Operating	\$0.94	\$1.59	\$0.01	\$0.16	\$0.78	\$0.01	_____
Total Operating Costs	\$42.63	\$72.26	\$0.55	\$7.05	\$35.25	\$0.27	_____
B. Fixed Costs							
2.0 Investment							
2.01 Land	\$40.88	\$69.29	\$0.52	\$16.35	\$81.76	\$0.62	_____
2.02 Facilities	\$1.56	\$2.64	\$0.02	\$1.20	\$5.99	\$0.05	_____
3.0 Depreciation							
3.01 Facilities	\$7.78	\$13.19	\$0.10	\$5.99	\$29.94	\$0.23	_____
Total Fixed Costs	\$50.22	\$85.12	\$0.64	\$23.54	\$117.69	\$0.89	_____
Total Operating and Fixed	\$92.85	\$157.38	\$1.19	\$30.59	\$152.94	\$1.16	_____
C. Labour	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Total Cost of Production	\$92.85	\$157.38	\$1.19	\$30.59	\$152.94	\$1.16	_____

Cost Analysis

	<u>Improved Pasture</u>	<u>Unimproved Pasture</u>
Total Annual Cost	\$14,856	\$4,894
Pasture Cost / Head / Day	\$1.19	\$1.16
Pasture Investment per Head	\$2,553	\$3,000
Pasture Cost / AUM	\$28.73	\$27.81
Pasture Investment per AUM	\$464	\$545

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.

Pasture Input

<u>Land Base</u>	<u>Improved Pasture</u>		<u>Unimproved Pasture</u>	
Total Acres	160 acres		160 acres	
Market Value (excluding fence, water, facilities)	\$1,500	\$240,000	\$600	\$96,000
	<u>Carrying Capacity</u>		<u>Carrying Capacity</u>	
Number of head pastured/season	94 head		32 head	
Number of head pastured/acre	0.59 Hd/acre		0.20 Hd/acre	
Number of pasture acres/head	1.7 Acre/head		5.0 Acre/head	
Estimated average weight on pasture	1350 lbs/head		1350 lbs/head	
Metabolic Animal Unit Value	1.25		1.25	
Grazing period	Days	132 days	Days	132 days
	Months	4.4 months	Months	4.4 months
<u>AUM Analysis</u>				
Total Animal Unit Months (AUM's)	517		176	
Total AUM's - Available Per Acre	3.23		1.10	
Pasture Investment per AUM	\$464		\$545	
Total Pasture Cost Per AUM	\$28.73		\$27.81	
<u>Pasture Efficiency Analysis</u>				
Pounds liveweight per acre	797		270	
Total pounds on pasture	127,440		43,200	
Pasture Cost per Head	\$1.19 /day		\$1.16 /day	

Risk & Sensitivity Analysis (Stress Test)

	<u>Improved Pasture</u>			<u>Unimproved Pasture</u>		
		<u>Amount Added</u>	<u>Decreased Cost / Day \$/head</u>		<u>Amount Added</u>	<u>Decreased Cost / Day \$/head</u>
Change in Stocking Rate	(from 94 hd)	5	\$0.06	(from 32 hd)	5	\$0.15
Change in Grazing Days	(from 132 days)	5	\$0.04	(from 132 days)	5	\$0.04
Change in Land Value	(from \$1,500)	-\$300	\$0.10	(from \$600)	-\$100	\$0.10
Percent Change in Owned Land Equity	(from 75%)	10%	\$0.09	(from 75%)	10%	\$0.11

Land Development & Forage Establishment - Rental & Custom

Custom Work	Improved Pasture			Unimproved Pasture		
	Cost/Ac	Number of Passes	Total/Ac	Cost/Ac	Number of Passes	Total/Ac
Land Breaking & Tillage	\$12.89	3	\$38.67	\$0.00	0	\$0.00
Land Clearing	\$0.00	0	\$0.00	\$0.00	0	\$0.00
Harrowing	\$5.82	2	\$11.64	\$0.00	0	\$0.00
Seeding	\$21.58	1	\$21.58	\$0.00	0	\$0.00
Other - Misc.	\$0.00	0	\$0.00	\$0.00	0	\$0.00
			\$71.89			\$0.00

Number of Productive Years (Annual Cost Amortization): Improved Pasture 10 years, Unimproved Pasture 10 years

Land Development & Forage Establishment - Seed & Treatment

	Seeding Rate per Acre	Price per Unit	Cost per Acre
Improved Pasture			
Forage seed	10 lb	\$4.25 /lb	\$42.50
Oat greenfeed (nurse crop)	1.25 bu	\$7.25 /bu	\$9.06
Unimproved Pasture	0 lb	\$0.00 /lb	\$0.00

Fertilizer

Fertilizer Type	Bulk Price \$/tonne	Actual Nutrient \$/lb	Nitrogen Usage
Nitrogen: (urea) 46-0-0	\$567	\$0.559	100%
Nitrogen: (NH3) 82-0-0	\$854	\$0.472	0%
Nitrogen: (liquid) 28-0-0	\$357	\$0.578	0%
Phosphorus: 11-52-0	\$630	\$0.431	-
Potash: 0-0-60	\$481	\$0.364	-
Sulphur: 20.5-0-0-24	\$471	\$0.413	-

Amount of Actual Pounds of Elements Applied Per Acre

	Nitrogen		Phosphorus		Potash		Sulphur		Total \$/acre
	lbs	\$/acre	lbs	\$/acre	lbs	\$/acre	lbs	\$/acre	
Improved Pasture									
Perennial Pasture Production	50	\$27.96	0	\$0.00	0	\$0.00	0	\$0.00	\$27.96
Establishment (nurse crop)	50	\$27.96	50	\$21.56	30	\$10.91	15	\$6.19	\$66.62
Unimproved Pasture	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	\$0.00

Improved Pasture acres fertilized annually: 80 acres
 Unimproved Pasture acres fertilized annually: 0 acres

Custom Application - Fertilizer: \$9.00 /acre

Chemicals

	Weed Control \$/acre	Spot Spray \$/acre	Insect Control \$/acre	Total Cost \$/acre
Improved Pasture				
Annual Production	\$0.00	\$1.00	\$0.00	\$1.00
Establishment (nurse crop)	\$14.00	\$0.00	\$0.00	\$14.00
Unimproved Pasture	\$0.00	\$1.00	\$0.00	\$1.00

Custom Application - Herbicide: \$8.00 /acre

Operating Costs

Maintenance & Repairs (total cost/year)

Fence Maintenance (% of investment cost)	2.00	%
Facilities Maintenance (% of investment cost)	1.00	%

	<u>Improved Pasture</u>		<u>Unimproved Pasture</u>	
	<u>\$/Acre</u>	<u>Total</u>	<u>\$/Acre</u>	<u>Total</u>
Maintenance & Repairs (total cost/year)				
Fence Maintenance	\$2.11	\$337.90	\$1.40	\$223.22
Maintenance & Repairs	\$0.50	\$80.00	\$0.50	\$80.00
Land Taxes	\$8.00	\$/acre	\$4.00	\$/acre
Miscellaneous	\$0.00	\$/acre	\$0.00	\$/acre
Interest on Operating	4.50	%		

Labour Costs

	<u>Improved Pasture</u>	<u>Unimproved Pasture</u>
Total hours/season	0.0	0.0
Rate per hour	\$24.00	\$24.00

Land Development & Forage Establishment - Greenfeed Production

	<u>Yield per Acre</u>	<u>Price per Unit</u>	<u>Value per Acre</u>
Improved Pasture			
Oat greenfeed (nurse crop)	1.50 ton/acre	\$0.02 /lb	\$60.00 (establishment year only)

Pasture Land Costs

	Improved Pasture		Unimproved Pasture	
	160 acres		160 acres	
	\$/Acre	Total	\$/Acre	Total
Market Value (excluding fence, water, facilities)	\$1,500	\$240,000	\$600	\$96,000
Owned Land Equity	75%		75%	
Land Financed	25%		25%	
Land Opportunity Cost (Investment Rate)	1.50%		1.50%	
Land cost				
Finance Rate & Term	4.000%	25 Years	4.000%	25 Years
Principle & Interest Cost		\$24.00 \$3,841		\$9.60 \$1,536
Owned Land Opportunity Cost		\$16.88 \$2,700		\$6.75 \$1,080
Total Cost		\$40.88 \$6,541		\$16.35 \$2,616
Pasture Cost per Head		\$1.19 /day		\$1.16 /day
Pasture Investment per Head on Pasture		\$2,553 /acre		\$3,000 /acre

Other Capital Costs

	Improved Pasture			Unimproved Pasture		
	Value	Useful Life Yrs	Salvage Value %	Value	Useful Life Yrs	Salvage Value %
Other Capital Costs						
Water Development	\$8,000	20	0	\$8,000	20	0
Handling facilities	\$0	20	0	\$0	20	0
Fence Cost	\$16,895	20	0	\$11,161	20	0
Total Other Capital Costs	\$24,895	20	0	\$19,161	20	0
Investment interest rate		2.00 %				
	\$/Acre	Total		\$/Acre	Total	
Other Capital Investment Cost @ 2%	\$1.56	\$248.95		\$1.20	\$191.61	
Other Capital Depreciation Cost	\$7.78	\$1,244.75		\$5.99	\$958.05	

Fence Costs

	Number of miles of Fence Required		Cost Per Mile of Fence			Improved Pasture Total Cost	Un-Improved Pasture Total Cost
	Improved Pasture	Unimproved Pasture	Materials	Labour	Equipment		
Barbed Wire (4 strand)	2.00	2.00	\$3,378	\$1,032	\$1,170	\$11,161	\$11,161
Electric Wire (4 strand)	0.00	0.00	\$2,378	\$650	\$718	\$0	\$0
Electric Wire (2 strand)	0.00	0.00	\$2,042	\$552	\$663	\$0	\$0
Electric Wire (1 strand)	2.00	0.00	\$1,730	\$502	\$635	\$5,734	\$0
Page Wire (w/optional top wire)	0.00	0.00	\$8,222	\$1,823	\$1,913	\$0	\$0
					Total	\$16,895	\$11,161

For more information on fence costs, [Manitoba Livestock Fence Cost Calculator](#)

Other Assumptions

Land Development Costs:

Includes: (eg. (\$71.89 custom land preparation + \$42.50 grass seed + \$9.06 oat nurse crop seed + \$66.62 est. fertilizer + \$9.00 custom fertilizer applic. + \$14.00 est. herbicide + \$8.00 custom herbicide applic. - \$60.00 greenfeed forage value) / 10 productive years = \$16.11 cost per acre annually)

Fence Maintenance Costs:

Assumes 2% of fence value for annual maintenance & repair.

(eg. (\$16,895 total fence cost x 2% annual repair cost) / 160 pasture acres = \$2.11 cost per acre)

Facilities Maintenance Costs:

Assumes 1% of other capital costs for annual maintenance & repair.

(eg. (\$8,000 total facilities cost x 1% annual repair cost) / 160 pasture acres = \$0.50 cost per acre)

Miscellaneous Costs:

Includes overhead expenses: hydro, telephone, accounting, supplies and insurance, etc.

Land Taxes:

The average for the province was based on land tax assessment and mill rates of a sample of municipalities with pasture less provincial tax rebate.

Interest On Operating:

Interest charges on operating costs are calculated at 4.5% for six months.

Land Cost:

Based on approximate average pasture values. Budget assumed improved pasture 25% financed at 4% for 25 years, plus 1.5% land equity opportunity cost and unimproved pasture 25% financed at 4% for 25 years, plus 1.5% land equity opportunity cost. Budget can be used to estimate cashflow by removing investment cost.

Land P&I Costs:

Improved Pasture (based on \$60,000 Mortgage) = \$3,841 payment per year / 160 acres = \$24.00/acre

Unimproved Pasture (based on \$24,000 Mortgage) = \$1,536 payment per year / 160 acres = \$9.60/acre

Land Investment Costs:

Improved Pasture = (Total Inv. x Owned Equity %) x Inv. Rate % (eg. ((\$1,500 x 75%) x 1.5%) = \$16.88/acre

Unimproved Pasture = (Total Inv. x Owned Equity %) x Inv. Rate % (eg. ((\$600 x 75%) x 1.5%) = \$6.75/acre

Other Capital Investment Cost:

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

Other Capital Investment Costs:

Improved Pasture: ((((\$24,895 + \$0.00) / 2) x 2% investment rate) / 160 acres = \$1.56 cost per acre

Unimproved Pasture: ((((\$19,161 + \$0.00) / 2) x 2% investment rate) / 160 acres = \$1.20 cost per acre

Other Capital Depreciation Cost:

Depreciation Cost =
$$\frac{\text{Original Cost} - \text{Salvage Value}}{\text{Useful Life}}$$

Other Capital Depreciation Costs:

Improved Pasture: ((\$24,895 - \$0.00) / 20 years useful life) / 160 pasture acres = \$7.78 cost per acre

Unimproved Pasture: ((\$19,161 - \$0.00) / 20 years useful life) / 160 pasture acres = \$5.99 cost per acre

Grazing Formulas:

Total Animal Animal Month's (AUM's) = 94 head x 1.25 Metabolic Animal Unit Value x 4.4 months = 517

Total AUM's - Available Per Acre = 517 Total AUM's / 160 acres = 3.23

Total Pasture Cost Per AUM = \$14855.96 cost per acre / 517 AUM = \$28.73

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June, 2020

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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)	3.2	_____
2. Animal Unit Equivalent** (Average weight of animals ^{0.75} ÷ 1000 ^{0.75} lbs)	1.25	_____
3. AUM's available per acre for 1 month (1 ÷ 2)	2.58	_____
4. Grazing period in months	4.4	_____
5. AUM's available per acre for total period (3 ÷ 4)	0.59	_____
6. Total Acres in Pasture	160	_____
7. Carrying Capacity of Pasture (# of Head) (5 x 6)	94	_____

* 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.

A more accurate estimate of daily or monthly forage demand of livestock on a grazing system can be reached by using the metabolic weight of the livestock rather than the live weight of the animals. It has been found that metabolic weight accounts for significant variation in dry matter intake among animals of different size (NRC 1996). Metabolic weight is the live weight to the 0.75 power. Beef cattle animal unit equivalents can be determined for animals of different sizes by calculating their metabolic weight as a percentage of the metabolic weight of a 1000 pound cow.

		Animal Unit Month (AUM) Available per Acre	Improved Pasture Carrying Capacity (based on 160 acres, 1350 lb animals for 132 days)			Unimproved Pasture Carrying Capacity (based on 160 acres, 1350 lb animals for 132 days)					
			Soil Groups			Soil Groups					
Vegetative Associations		Soil Groups			Soil Groups			Soil Groups			
		Light	Medium	Heavy	Light	Medium	Heavy	Light	Medium	Heavy	
		2	3	4	2	3	4	2	3	4	
Bush	Woodland	1	0.2	0.4	0.5	-	-	-	5	11	14
	Open woodland	2	0.4	0.6	0.8	-	-	-	11	17	23
	Harvested woodland	3	0.6	0.8	0.9	-	-	-	17	23	26
	Boreal forest	4	0.0	0.0	0.0	-	-	-	0	0	0
Meadow	Upland grass	5	0.8	1.2	1.0	-	-	-	23	34	29
	Transitional grassland	6	1.2	1.2	1.4	-	-	-	34	34	40
	Lowland meadow	7	1.6	1.8	1.8	-	-	-	46	52	52
Improved	Hay regrowth	8	0.5	0.8	1.0	14	23	29	-	-	-
	Poor tame forage	9	1.4	1.4	1.6	40	40	46	-	-	-
	Fair tame forage	10	2.0	2.8	3.0	58	81	87	-	-	-
	Good tame forage	11	3.5	4.0	5.0	101	116	145	-	-	-
Annual	Annual crop land	12	0.0	3.0	3.0	0	87	87	-	-	-
	Crop stubble	13	0.0	0.5	0.5	0	14	14	-	-	-
	Fall seeded cereal	14	0.0	1.6	1.6	0	46	46	-	-	-

Source Manitoba Crown Lands

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

Contact us

- Go to manitoba.ca/agriculture
- Toll free at 1-844-769-6224
- Email us at mbfarmbusiness@gov.mb.ca
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