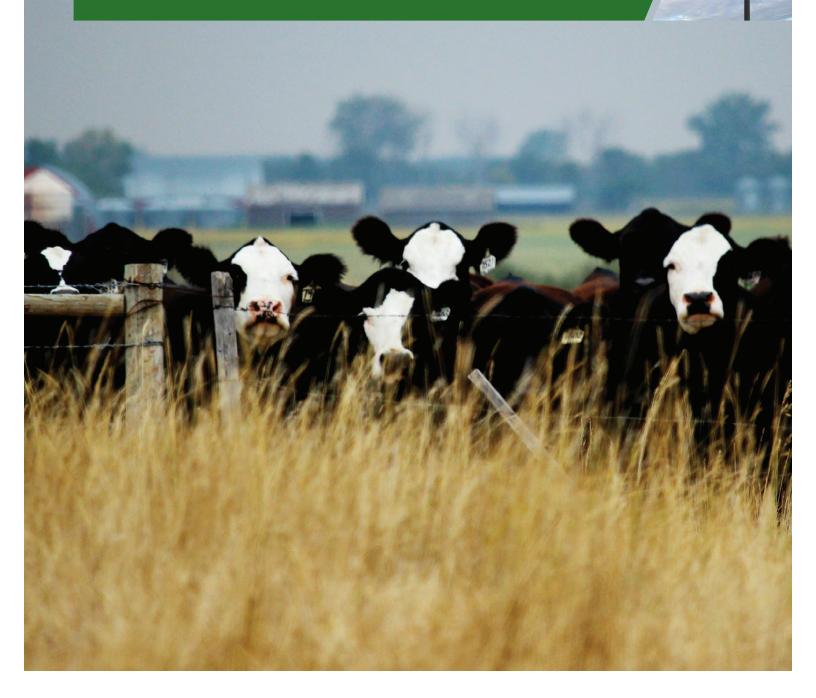
2023 Cost of Production Pasture







Guidelines For Estimating Improved & Unimproved

Pasture Production Costs - 2023

Date: May, 2023

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:



<u>The Farm Machinery Cost of Production Guide</u> determine machinery costs.

is also available to help

Contact Us

For more information, contact a Farm Management Specialist.

- manitoba.ca/agriculture
- mbfarmbusiness@gov.mb.ca
- 1-844-769-6224

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 a Farm Management Specialist.

Total AUM's - Available Per Acre

Pasture Production Cost Summary - 2023

Improved Pasture Unimproved Pasture 160 acres 160 acres 94 head (1.7 ac/hd) @ 1350lbs 32 head (5 ac/hd) @ 1350lbs 135 Days on Pasture 135 Days on Pasture Total Animal Unit Months (AUM's) 529 180 3.31 1.13

> \$1,719/acre = \$275,000 Total Cost (\$68,750 loan @ 7.75%, 25 years = \$6,303 annual pmt)

\$750/acre = \$120,000 Total Cost (\$30,000 loan @ 7.75%, 25 years = \$2,751 annual pmt)

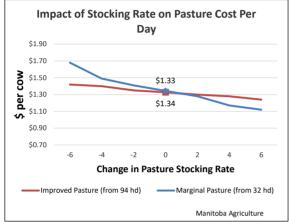
		Season	Daily		Season	Daily	
A. Operating Costs	\$/Acre	\$/head	\$/head	\$/Acre	\$/head	\$/head	Your Cost
Land Development	\$16.27	\$27.57	\$0.20	\$0.00	\$0.00	\$0.00	
Fertilizer - Annual	\$19.11	\$32.38	\$0.24	\$0.00	\$0.00	\$0.00	
Herbicide	\$1.00	\$1.69	\$0.01	\$1.00	\$5.00	\$0.04	
Fence Maintenance	\$2.46	\$4.17	\$0.03	\$1.86	\$9.29	\$0.07	
Facilities Maintenance	\$0.50	\$0.85	\$0.01	\$0.50	\$2.50	\$0.02	
Pasture Days Insurance	\$3.75	\$6.39	\$0.05	\$1.29	\$6.46	\$0.05	
Land Taxes	\$10.00	\$16.95	\$0.13	\$5.00	\$25.00	\$0.19	
<u>Miscellaneous</u>	\$0.00	\$0.00	\$0.00	<u>\$0.00</u>	\$0.00	\$0.00	
Sub-total Operating Cost	\$53.08	\$90.00	\$0.67	\$9.65	\$48.25	\$0.36	
Interest on Operating	\$2.26	\$3.82	\$0.03	<u>\$0.41</u>	\$2.05	\$0.02	
Total Operating Costs	\$55.34	\$93.79	\$0.70	\$10.06	\$50.30	\$0.37	
B. Fixed Costs							
2.0 Investment							
2.01 Land	\$39.40	\$66.77	\$0.49	\$17.19	\$85.96	\$0.64	
2.02 Facilities	\$2.16	\$3.66	\$0.03	\$1.79	\$8.93	\$0.07	
3.0 Depreciation							
3.01 Facilities	<u>\$8.65</u>	\$14.66	\$0.11	<u>\$7.15</u>	\$35.74	\$0.26	
Total Fixed Costs	\$50.21	\$85.09	\$0.63	\$26.13	\$130.63	\$0.97	
Total Operating and Fixed	\$105.55	\$178.88	\$1.33	\$36.19	\$180.93	\$1.34	
C. Labour	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Total Cost of Production	\$105.55	\$178.88	\$1.33	\$36.19	\$180.93	\$1.34	

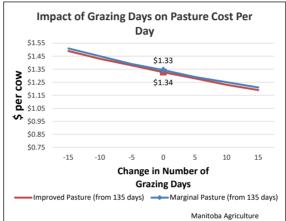
	Cost Analysis		
<u>-</u>	Improved Pasture	Unimproved Pasture	
Total Annual Cost	\$16,887	\$5,790	
Pasture Cost / Head / Day	\$1.33	\$1.34	
Pasture Investment per Head	\$2,926	\$3,750	
Pasture Cost / AUM	\$31.92	\$32.17	
Pasture Investment per AUM	\$520	\$667	

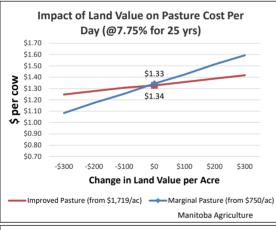
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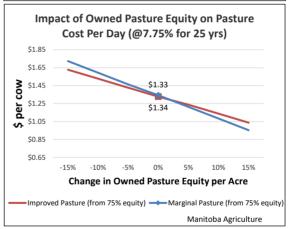
Risk & Sensitivity	y Analysis	(Stress Test)

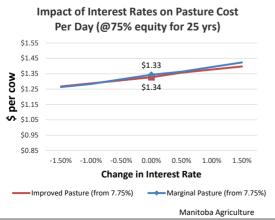
	Imp	roved Pas	ture	Unim	Unimproved Pasture		
	' <u>-</u>		Changed	_		Changed	
		Amount Added	Cost / Day \$/head		Amount Added	Cost / Day \$/head	
Change in Stocking Rate	(from 94 hd)	2	\$1.30	(from 32 hd)	2	\$1.28	
Change in Grazing Days	(from 135 days)	5	\$1.28	(from 135 days)	5	\$1.29	
Change in Land Value	(from \$1,719)	\$100	\$1.36	(from \$750)	\$100	\$1.42	
Percent Change in Owned La Equity	and (from 75%)	-5%	\$1.43	(from 75%)	-5%	\$1.46	
Change in Interest Rate	(from 7.75%)	0.50%	\$1.36	(from 7.75%)	0.50%	\$1.36	











Pasture Days Insurance Cost & Analysis

Coverage

Historic grazing period or Individual 10-year average 135 days or 4.5 months

Improved Pasture

Coverage Level of of Normal AU days 90%

Date livestock placed on pasture May 21 (coverage would last until September 20 , or 122 days)

Historical grazing period end date (135 days)

October 3

Dollar Coverage per Animal Unit for each AU day

\$2.25

Premium Rate 4.50%

Premium share (producer) 40%

IIn	impro	,,,,d I	Daati	

MASC Pasture Days Insurance Factsheet

MASC Pasture Days Insurance Calculator

Total Acres	160	acres		160	acres
Animal Inventory	Number of Head	Animal Unit (AU)		Number of Head	Animal Unit (AU)
1 Bull, bred cow or cow/calf pair = 1.3 A.U.	94	122	·	32	42

Coverage Calculation

Animal Unit Days	16,470 (122 AU x 135 days)	5,670 (42 AU x 135 days)
Pasture Guarantee Days	14,823 (16,470 x 90% or 122 days)	5,103 (5,670 x 90% or 122 days)
Estimated Dollar Coverage	\$33,351.75 (14,823 x \$2.25)	\$11,481.75 (5,103 x \$2.25)
Est. Avg. Coverage (\$/head/season)	\$354.81 (\$33,352 ÷ 94 head)	\$358.80 (\$11,482 ÷ 32 head)
Est. Avg. Coverage (\$/head/day)	\$2.63 (\$354.81 ÷ 135 days)	\$2.66 (\$358.8 ÷ 135 days)

Premium Calculation

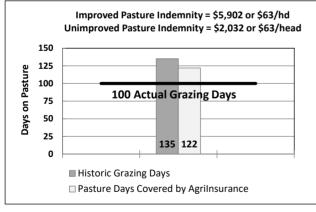
Premium = Expected number of Grazing Days x Animal Units x coverage Level x Insurable Value x Premium Rate %

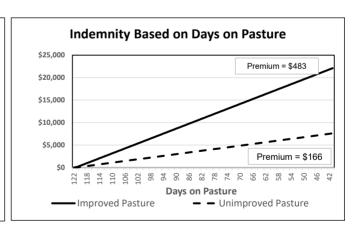
Premium	\$1,500.83 (135 x 122 X 90% x \$2.25 x 4.5%)	\$516.68 (135 x 42 X 90% x \$2.25 x 4.5
Est. Premium: Producer Share (1.8%)	\$600.33 (\$1,500.83 x 40%)	\$206.67 (\$516.68 x 40%)
Est. Premium (\$/Acre)	\$3.75 (\$600.33 ÷ 160)	\$1.29 (\$206.67 ÷ 160)
Est. Premium (\$/head/season)	\$6.39 (\$600.33 ÷ 94)	\$6.46 (\$206.67 ÷ 32)
Est. Premium (\$/head/day)	\$0.0473 (\$6.39 ÷ 135)	\$0.0478 (\$6.46 ÷ 135)

Indemnity Calculation

Date livestock removed from pasture (enter M/DD) August 29

Livestock removed from pasture after 100 days (22 days of pasture coverage) **Actual Animal Unit Days 12,200** (122 AU x 100 days) 4,200 (42 AU x 100 days) Pasture Shortfall 903 (5,103 - 4,200) 2,623 (14,823 - 12,200) **Estimated Indemnity \$5,901.75** (2,623 AU Days x \$2.25) **\$2,031.75** (903 AU Days x \$2.25) Est. Indemnity (\$/Acre) **\$36.89** (\$5,902 ÷ 160 acres) \$12.70 (\$2,032 ÷ 160 acres) Est. Indemnity (\$/head/season) **\$62.78** (\$5,902 ÷ 94 head) \$63.49 (\$2,032 ÷ 32 head) Est. Indemnity (\$/head/day) \$2.85 (\$62.78 ÷ 22 days) \$2.89 (\$63.49 ÷ 22 days)





September 18

Breakeven Analysis

Est. Breakeven removal date from pasture (120 days) (Removal Date Est. Indemnity = Est. Producer Premium)

AUM Analysis

Total Animal Unit Months (AUM's)	550	187
Total AUM's - Available Per Acre	3.44	1.17

		Pa	sture Input		
Land Base		Improved F	Pasture	Unimprove	d Pasture
Total Acres		160	acres	160	acres
Market Value (excludi	ng fence, water, facilities)	\$1,719	\$275,000	\$750	\$120,000
		Carrying C	apacity	Carrying Ca	apacity
Number of head pas	tured/season	94	head	32	head
Number of head pas	tured/acre	0.59	Hd/acre	0.20	Hd/acre
Number of pasture a	cres/head	1.7	Acre/head	5.0	Acre/head
Estimated average	weight on pasture	1350	lbs/head	1350	lbs/head
Metabolic Animal Un	it Value	1.25		1.25	
Grazing period	Days	135	days	135	days
	Months	4.5	months	4.5	months
AUM Analysis					
Total Animal Unit Mo	onths (AUM's)	529		180	
Total AUM's - Availa	ble Per Acre	3.31		1.13	
Pasture Investment	per AUM	\$520		\$667	
Total Pasture Cost F	Per AUM	\$31.92		\$32.17	
Pasture Efficency A	<u>Analysis</u>				
Pounds liveweight pe	er acre	797		270	

Land Development & Forage Establishment - Rental & Custom

43,200

\$1.34 /day

	Impro	re	Unim	Unimproved Pasture			
		Number			Number of		
Custom Work	Cost/Ac	of Passes	Total/Ac	Cost/Ac	Passes	Total/Ac	
Land Breaking & Tillage	\$15.00	3	\$45.00	\$0.00	0	\$0.00	
Land Clearing	\$0.00	0	\$0.00	\$0.00	0	\$0.00	
Harrowing	\$8.00	2	\$16.00	\$0.00	0	\$0.00	
Seeding	\$25.00	1	\$25.00	\$0.00	0	\$0.00	
Other - Misc.	\$0.00	0	<u>\$0.00</u>	\$0.00	0	\$0.00	
			\$86.00			\$0.00	

127,440

\$1.33 /day

Number of Productive Years 10 years 10 years

(Annual Cost Amortization)

Total pounds on pasture

Pasture Total Cost per Head

Land Development & Forage Establishment - Seed & Treatment

	Seeding Rate	Price	Cost
	<u>per Acre</u>	<u>per Unit</u>	per Acre
Improved Pasture			
Forage seed	10 lb	\$4.25 /lb	\$42.50
Oat greenfeed (nurse crop)	1.25 bu	\$12.00 /bu	\$15.00
Unimproved Pasture	0 lb	\$0.00 /lb	\$0.00

	Fertilizer							
	Bulk Price	Actual Nutrient	Nitrogen	Sulphur				
Fertilizer Type	\$/tonne	<u>\$/Ib</u>	<u>Usage</u>	<u>Usage</u>				
Nitrogen: (urea) 46-0-0	\$775	\$0.764	100%	-				
Nitrogen: (NH3) 82-0-0	\$1,300	\$0.719	0%	-				
Nitrogen: (liquid) 28-0-0	\$490	\$0.794	0%	-				
Phosphorus: 11-52-0	\$1,175	\$0.863	-	-				
Potash: 0-0-60	\$800	\$0.605	-	-				
Sulphur: 20.5-0-0-24	\$650	\$0.576	-	100%				
MES S15: 13-33-0-15	\$1,190	\$1.037	-	0%				

Amount of Actual Pounds of Elements Applied Per Acre

_	Nit	rogen	Phos	phorus	Po	tash_	Sul	<u>phur</u>	Total
	lbs	\$/acre	lbs	\$/acre	lbs	\$/acre	lbs	\$/acre	\$/acre
Improved Pasture									
Perennial Pasture Production	50	\$38.21	0	\$0.00	0	\$0.00	0	\$0.00	\$38.21
Establishment (nurse crop)	50	\$20.34	50	\$51.25	30	\$18.14	15	\$18.43	\$108.16
Unimproved Pasture	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	\$0.00

Improved Pasture acres fertilized annually80 acresUnimproved Pasture acres fertilized annually0 acres

Custom Application - Fertilizer \$9.00 /acre

		С	hemicals	
	Weed Control <u>\$/acre</u>	Spot Spray <u>\$/acre</u>	Insect Control <u>\$/acre</u>	Total Cost <u>\$/acre</u>
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 %

	Improved Pastur	e	Unimproved Past	ure
	\$/Acre	Total	\$/Acre	Total
Maintenance & Repairs (total cost/year)			·	
Fence Maintenance	\$2.46	\$393.54	\$1.86	\$297.42
Maintenance & Repairs	\$0.50	\$80.00	\$0.50	\$80.00
Land Taxes	\$10.00	\$/acre	\$5.00	S/acre
Miscellaneous	\$0.00	\$/acre	\$0.00	S/acre
Interest on Operating	8.50	%		

	Labour Costs	
	Improved Pasture	Unmproved Pasture
Total hours/season	0.0	0.0
Rate per hour	\$27.00	\$27.00

La	nd Development & Forage	Establishment - G	reenfeed Product	tion
	Yield <u>per Acre</u>	Price <u>per Unit</u>	Value <u>per Acre</u>	
Improved Pasture				
Oat greenfeed (nurse crop)	1.50 ton/acre	\$0.040 /lb	\$120.00	(establishment year only)

	Pas	ture Land C	osts		
Imp	roved Pastu	ıre	Unim	proved Past	ure
<u></u>	160	acres		160	acres
•	\$/Acre	Total	_	\$/Acre	Total
Market Value (excluding fence, water, facilities)	\$1,719	\$275,000	_	\$750	\$120,000
Owned Land Equity	75%			75%	
Land Financed	25%			25%	
Land Opportunity Cost (Investment Rate)	0.00%			0.00%	
Land cost					
Finance Rate & Term 7.750%	25 `	Years	7.750%	25 \	∕ears
Principle & Interest Cost	\$39.40	\$6,303		\$17.19	\$2,751
Owned Land Opportunity Cost	\$0.00	<u>\$0</u>		\$0.00	\$0
Total Cost	\$39.40	\$6,303		\$17.19	\$2,7 51
Pasture Total Cost per Head	\$1.33 /	'day		\$1.34 /	day
Pasture Investment per Head on Pasture	\$2,926 /	acre acre		\$3,750 /	acre

		Oth	ner Capitai	Costs		
	Imp	roved Past	ure	Unim	proved Pas	ture
Other Capital Costs	Value	Useful <u>Life Yrs</u>	Salvage Value %	<u>Value</u>	Useful <u>Life Yrs</u>	Salvage Value %
Water Development	\$8,000	20	0	\$8,000	20	0
Handling facilities	\$0	20	0	\$0	20	0
Fence Cost	\$19,677	<u>20</u>	<u>0</u>	<u>\$14,871</u>	<u>20</u>	<u>0</u>
Total Other Capital Costs	\$27,677	20	0	\$22,871	20	0
Investment interest rate		2.50	%			
	-	\$/Acre	Total	-	\$/Acre	Total
Other Capital Investment Cost @ 2	.5%	\$2.16	\$345.96	_	\$1.79	\$285.89
Other Capital Depreciation Cost		\$8.65	\$1,383.84		\$7.15	\$1,143.54

		Fence Cos	ts				
		niles of Fence uired	Cost	Per Mile of	Fence	Improved	Un- Improved
	Improved Pasture	Unimproved Pasture	Materials	Labour	Equipment	Pasture Total Cost	Pasture Total Cost
Barbed Wire (4 strand)	2.00	2.00	\$5,147	\$1,118	\$1,170	\$14,871	\$14,871
Electric Wire (4 strand)	0.00	0.00	\$2,510	\$500	\$490	\$0	\$0
Electric Wire (2 strand)	0.00	0.00	\$1,993	\$412	\$435	\$0	\$0
Electric Wire (1 strand)	2.00	0.00	\$1,625	\$370	\$408	\$4,806	\$0
Page Wire (w/optional top wire)	0.00	0.00	\$9,259	\$2,344	\$2,320	\$0	<u>\$0</u>
					Total	\$19,6 7 7	\$14,871
For more information on fence costs, Manitoba	Livestock Fence Co	st Calculator					

Other Assumptions

Land Development Costs:

Includes: (eg. (\$86.00 custom land preparation + \$42.50 grass seed + \$15.00 oat nurse crop seed + \$108.16 est. fertilizer + \$9.00 custom fertilizer applic. + \$14.00 est. herbicide + \$8.00 custom herbicide applic. - \$120.00 greenfeed forage value) / 10 productive years = \$16.27 cost per acre annually)

Fence Maintenace Costs:

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

(eg. (\$19,677 total fence cost x 2% annual repair cost) / 160 pasture acres = \$2.46 cost per acre)

Facilities Maintenace Costs:

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

(eg. (\$8,000 total facilites 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 8.5% for six months.

Land Cost:

Based on approximate average pasture values. Budget assumed improved pasture 25% financed at 7.75% for 25 years, plus 0% land equity opportunity cost and unimproved pasture 25% financed at 7.75% for 25 years, plus 0% land equity opportunity cost. Budget can be used to estimate cashflow by removing investment cost.

Land P&I Costs:

Improved Pasture (based on \$68,750 Mortgage) = \$6,303 payment per year) / 160 acres = \$39.40/acre Unimproved Pasture (based on \$30,000 Mortgage) = \$2,751 payment per year) / 160 acres = \$17.19/acre Land Investment Costs:

Improved Pasture = (Total Inv. x Owned Equity %) x Inv. Rate % (eg. $((\$1,719 \times 75\%) \times 0\%) = \$0.00/acre$ Unimproved Pasture = (Total Inv. x Owned Equity %) x Inv. Rate % (eg. $((\$750 \times 75\%) \times 0\%) = \$0.00/acre$

Other Capital Investment Cost:

Investment Cost = Original Cost + Salvage Value x Investment Rate

2

Other Capital Investment Costs:

Improved Pasture: (((\$27,677 + \$0.00) / 2) x 2.5% investment rate) / 160 acres = \$2.16 cost per acre Unimproved Pasture: (((\$22,871 + \$0.00) / 2) x 2.5% investment rate) / 160 acres = \$1.79 cost per acre

Other Capital Depreciation Cost:

Depreciation Cost = Original Cost - Salvage Value

Useful Life

Other Capital Depreciation Costs:

Improved Pasture: ((\$27,677 - \$0.00) / 20 years useful life) / 160 pasture acres = \$8.65 cost per acreUnimproved Pasture: ((\$22,871 - \$0.00) / 20 years useful life) / 160 pasture acres = \$7.15 cost per acre

Grazing Formulas:

Total Animal Animal Month's (AUM's) = 94 head x 1.25 Metabolic Animal Unit Value x 4.5 months = 529

Total AUM's - Available Per Acre = 529 Total AUM's / 160 acres = 3.31

Total Pasture Cost Per AUM = \$16887.40 cost per acre / 529 AUM = \$31.92

May, 2023

Contact Us

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- · manitoba.ca/agriculture
- mbfarmbusiness@gov.mb.ca
- 1-844-769-6224

Calculating Pasture Capacity - Number of Head Pastured

		Example	Your Farm
1.	Animal Unit Month Available per acre* (see table; soil group 3 veg assoc. 11)	3.3	
2.	Animal Unit Equivalents** (Average weight of animals^.75 ÷ 1000 ^.75lbs)	1.25	
3.	AUM's available per acre for I month (1 ÷ 2)	2.65	
4.	Grazing period in months	4.5	
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.

				nal Unit M I) Availab Acre soil Grou	le per	Carr (base 1350 lb	roved Pas ying Cap d on 160 animals days oil Group	acity acres, for 135	Carr (base 1350 lb	oroved P ying Cap d on 160 animals days oil Group	acity acres, for 13
	Vegetative Associations			Medium			Medium			Medium	
			2	3	4	2	3	4	2	3	4
	Woodland	1	0.2	0.4	0.5	-	-	-	5	11	14
Durch	Open woodland	2	0.4	0.6	0.8	-	-	-	11	17	22
Bush	Harvested woodland	3	0.6	0.8	0.9	-	-	-	17	23	26
	Boreal forest	4	0.0	0.0	0.0	-	-	-	0	0	0
	Upland grass	5	0.8	1.2	1.0	-	-	-	22	34	28
Meadow	Transitional grassland	6	1.2	1.2	1.4	-	-	-	34	34	39
	Lowland meadow	7	1.6	1.8	1.8	-	-	-	45	51	51
	Hay regrowth	8	0.5	0.8	1.0	14	22	28	-	-	-
Improved	Poor tame forage	9	1.4	1.4	1.6	39	39	45	-	-	•
iiipioveu	Fair tame forage	10	2.0	2.8	3.0	56	79	85	-	-	-
	Good tame forage	11	3.5	4.0	5.0	99	113	142	-	-	-
	Annual crop land	12	0.0	3.0	3.0	0	85	85	-	-	-
Annual	Crop stubble	13	0.0	0.5	0.5	0	14	14	-	-	-
	Fall seeded cereal	14	0.0	1.6	1.6	0	45	45	-	-	-

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