## 2024 Cost of Production Pasture



## Manitobasm

# Guidelines For Estimating <br> Improved \& Unimproved Pasture Production Costs - 2024 

Date: April, 2024

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 managment 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:


The Farm Machinery Cost of Production Guide is also available to help determine machinery costs.

## 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.

## Pasture Production Cost Summary - 2024

|  | Improved Pasture |
| :---: | :---: |
|  | 160 acres |
|  | 94 head (1.7 ac/hd) @ 1350lbs |
|  | 135 Days on Pasture |
| Total Animal Unit Months (AUM's) | 529 |
| Total AUM's - Available Per Acre | 3.31 |
| $\begin{array}{r} \$ 1,8 \\ (\$ 72,500 \text { loan } \end{array}$ | 813/acre $=\$ 290,000$ Total Cost <br> @ $8 \%, 25$ years $=\$ 6,792$ annual pmt) |


| A. Operating Costs |  | Season | Daily |  | Season | Daily |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | \$/Acre | \$/head | \$/head | \$/Acre | \$/head | \$/head | Your Cost |
| Land Development | \$17.75 | \$30.08 | \$0.22 | \$0.00 | \$0.00 | \$0.00 |  |
| Fertilizer - Annual | \$20.34 | \$34.47 | \$0.26 | \$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 | \$3.89 | \$6.62 | \$0.05 | \$1.34 | \$6.70 | \$0.05 |  |
| Land Taxes | \$10.00 | \$16.95 | \$0.13 | \$5.00 | \$25.00 | \$0.19 |  |
| Miscellaneous | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 |  |
| Sub-total Operating Cost | \$55.93 | \$94.83 | \$0.71 | \$9.70 | \$48.49 | \$0.36 |  |
| Interest on Operating | \$2.52 | \$4.27 | \$0.03 | \$0.44 | \$2.18 | \$0.02 |  |
| Total Operating Costs | \$58.45 | \$99.07 | \$0.74 | \$10.13 | \$50.67 | \$0.38 |  |
| B. Fixed Costs |  |  |  |  |  |  |  |
| 2.01 Land | \$42.45 | \$71.95 | \$0.53 | \$19.03 | \$95.14 | \$0.70 |  |
| 2.02 Facilities | \$2.16 | \$3.66 | \$0.03 | \$1.79 | \$8.93 | \$0.07 |  |
| 3.0 Depreciation |  |  |  |  |  |  |  |
| 3.01 Facilities | \$8.65 | \$14.66 | \$0.11 | \$7.15 | \$35.74 | \$0.26 |  |
| Total Fixed Costs | \$53.26 | \$90.27 | \$0.67 | \$27.96 | \$139.81 | \$1.03 |  |
| Total Operating and Fixed | \$111.71 | \$189.34 | \$1.41 | \$38.10 | \$190.48 | \$1.41 |  |
| C. Labour | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 |  |
| Total Cost of Production | \$111.71 | \$189.34 | \$1.41 | \$38.10 | \$190.48 | \$1.41 |  |
| Cost Analysis |  |  |  |  |  |  |  |
|  | Improved Pasture |  |  | Unimproved Pasture |  |  |  |
| Total Annual Cost | \$17,874 |  |  | \$6,095 |  |  |  |
| Pasture Cost / Head / Day | \$1.41 |  |  | \$1.41 |  |  |  |
| Pasture Investment per Head | \$3,085 |  |  | \$4,063 |  |  |  |
| Pasture Cost / AUM | \$33.79 |  |  | \$33.86 |  |  |  |
| Pasture Investment per AUM | \$548 |  |  | \$722 |  |  |  |

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.

## Risk \& Sensitivity Analysis (Stress Test)

|  | Improved Pasture |  |  | Unimproved Pasture |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Changed |  |  |  | Changed |
|  |  | Amount Added | Cost / Day \$/head |  | Amount Added | Cost / Day \$/head |
| Change in Stocking Rate | (from 94 hd ) | 2 | \$1.38 | (from 32 hd ) | 2 | \$1.34 |
| Change in Grazing Days (f | (from 135 days) | 5 | \$1.35 | (from 135 days) | 5 | \$1.36 |
| Change in Land Value | (from \$1,813) | \$100 | \$1.44 | (from \$813) | \$100 | \$1.50 |
| Percent Change in Owned Land Equity | d (from 75\%) | -5\% | \$1.52 | (from 75\%) | -5\% | \$1.56 |
| Change in Interest Rate | (from 8\%) | 0.50\% | \$1.44 | (from 8\%) | 0.50\% | \$1.45 |






## Pasture Days Insurance Cost \& Analysis

## Coverage



## Premium Calculation

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

| Premium | $\$ 1,555.92(134 \times 122 \times 90 \% \times \$ 2.25 \times 4.7 \%)$ | $\$ 535.64(134 \times 42 \times 90 \% \times \$ 2.25 \times 4.7$ |
| :--- | :---: | :---: |
| Est. Premium: Producer Share (1.88\%) | $\$ 622.37(\$ 1,555.92 \times 40 \%)$ | $\$ 214.26(\$ 535.64 \times 40 \%)$ |
| Est. Premium (\$/Acre) | $\$ 3.89(\$ 622.37 \div 160)$ | $\$ 1.34(\$ 214.26 \div 160)$ |
| Est. Premium (\$/head/season) | $\$ 6.62(\$ 622.37 \div 94)$ | $\$ 6.70(\$ 214.26 \div 32)$ |
| Est. Premium (\$/head/day) | $\mathbf{\$ 0 . 0 4 9 4}(\$ 6.62 \div 134)$ | $\$ 0.0500(\$ 6.7 \div 134)$ |

## Indemnity Calculation

Date livestock removed from pasture (enter M/DD)
Livestock removed from pasture after
Actual Animal Unit Days
Pasture Shortfall
Estimated Indemnity
Est. Indemnity (\$/Acre)
Est. Indemnity (\$/head/season)
Est. Indemnity (\$/head/day)
August 29
100 days

12,200 ( $122 \mathrm{AU} \times 100$ days)
2,513 (14,713-12,200)
\$5,654.70 (2,513 AU Days $\times \$ 2.25$ )
$\$ 35.34$ (\$5,655 $\div 160$ acres)
$\$ 60.16$ ( $\$ 5,655 \div 94$ head)
\$2.86 (\$60.16 $\div 21$ days)
(21 days of pasture coverage)
4,200 ( 42 AU x 100 days) 865 (5,065-4,200)
\$1,946.70 (865 AU Days x \$2.25)
\$12.17 (\$1,947 $\div 160$ acres)
\$60.83 (\$1,947 $\div 32$ head)
$\$ 2.90$ ( $\$ 60.83 \div 21$ days)


Breakeven Analysis
Est. Breakeven removal date from pasture (119 days)
(Removal Date Est. Indemnity = Est. Producer Premium)


September 17

AUM Analysis

| Total Animal Unit Months (AUM's) | 546 | 186 |
| :--- | ---: | :--- |

Total AUM's - Available Per Acre 3.41 1.16

## Pasture Input

| Land Base | Improved Pasture | Unimproved Pasture |
| :---: | :---: | :---: |
| Total Acres | 160 acres | 160 acres |
| Market Value (excluding fence, water, facilities) | \$1,813 \$290,000 | \$813 \$130,000 |
|  | Carrying Capacity | Carrying Capacity |
| Number of head pastured/season | 94 head | 32 head |
| Number of head pastured/acre | $0.59 \mathrm{Hd} / \mathrm{acre}$ | 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 | 135 days | 135 days |
| Months | 4.5 months | 4.5 months |
| AUM Analysis |  |  |
| Total Animal Unit Months (AUM's) | 529 | 180 |
| Total AUM's - Available Per Acre | 3.31 | 1.13 |
| Pasture Investment per AUM | \$548 | \$722 |
| Total Pasture Cost Per AUM | \$33.79 | \$33.86 |
| Pasture Efficency Analysis |  |  |
| Pounds liveweight per acre | 797 | 270 |
| Total pounds on pasture | 127,440 | 43,200 |
| Pasture Total Cost per Head | \$1.41 /day | \$1.41 /day |

## Land Development \& Forage Establishment - Rental \& Custom

| Custom Work | Improved Pasture |  |  | Unimproved Pasture |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Cost/Ac | Number of Passes Total/Ac |  | Cost/Ac $\begin{gathered}\text { Number of } \\ \text { Passes Total/Ac }\end{gathered}$ |  |  |  |
| Land Breaking \& Tillage | \$20.00 | 3 | \$60.00 | \$0.00 | 0 | 0 | \$0.00 |
| Land Clearing | \$0.00 | 0 | \$0.00 | \$0.00 | 0 | 0 | \$0.00 |
| Harrowing | \$12.00 | 2 | \$24.00 | \$0.00 | 0 | 0 | \$0.00 |
| Seeding | \$28.00 | 1 | \$28.00 | \$0.00 | 0 | 0 | \$0.00 |
| Other - Misc. | \$0.00 | 0 | \$0.00 | \$0.00 | 0 | 0 | \$0.00 |
|  |  |  | \$112.00 |  |  |  | \$0.00 |
| Number of Productive Years <br> (Annual Cost Amortization) |  | 10 years |  | 10 years |  |  |  |

Land Development \& Forage Establishment - Seed \& Treatment

|  | Seeding Rate <br> per Acre | Price <br> per Unit | Cost <br> per Acre |
| :---: | :---: | :---: | ---: |
| Improved Pasture |  |  | $\$ 4.25 / \mathrm{lb}$ |
| Forage seed | 10 lb | $\$ 9.00 \mathrm{lbu}$ | $\$ 42.50$ |
| Oat greenfeed (nurse crop) | 1.25 bu | $\$ 0.00 \mathrm{lb}$ | $\$ 11.25$ |
| Unimproved Pasture | 0 lb | $\$ 0.00$ |  |


| Fertilizer |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Bulk Price\$/tonne |  |  | Actual Nutrient $\$ / 1 \mathrm{l}$ | Nitrogen |  | Sulphur |  |  |
| Fertilizer Type |  |  |  | Usage | Usage |  |  |
| Nitrogen: (urea) 46-0-0 | \$825 |  |  |  | \$0.814 | 100\% |  | - |  |  |
| Nitrogen: (NH3) 82-0-0 | \$1,300 |  |  | \$0.719 |  |  | - |  |  |
| Nitrogen: (liquid) 28-0-0 | \$500 |  |  | \$0.810 | 0\% |  | - |  |  |
| Phosphorus: 11-52-0 | \$1,075 |  |  | \$0.766 | - |  | - |  |  |
| Potash: 0-0-60 | \$625 |  |  | \$0.473 |  |  |  |  |  |
| Sulphur: 20.5-0-0-24 | \$600 |  |  | \$0.439 | - |  | 100\% |  |  |
| MES S15: 13-33-0-15 | \$1,000 |  |  | \$0.635 | - |  | 0\% |  | Total \$/acre |
|  | Amount of Actual Pounds of Elements Applied Per Acre |  |  |  |  |  |  |  |  |
|  | Nitrogen |  | Phosphorus |  | Potash |  | Sulphur |  |  |
|  | lbs | \$/acre | lbs | \$/acre | lbs | \$/acre | lbs | \$/acre |  |
| Improved Pasture |  |  |  |  |  |  |  |  |  |
| Perennial Pasture Production | 50 | \$40.68 | 0 | \$0.00 | 0 | \$0.00 | 0 | \$0.00 | \$40.68 |
| Estabishment (nurse crop) | 50 | \$21.65 | 50 | \$46.89 | 30 | \$14.17 | 15 | \$17.01 | \$99.72 |
| Unimproved Pasture | 0 | \$0.00 | 0 | \$0.00 | 0 | \$0.00 | 0 | \$0.00 | \$0.00 |
| Improved Pasture acres fertilized annually Unimproved Pasture acres fertilized annually |  |  | 80 acres |  |  |  |  |  |  |
|  |  |  | 0 acres |  |  |  |  |  |  |
| Custom Application - Fertilizer |  |  | \$10.00 /acre |  |  |  |  |  |  |


| Chemicals |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Weed Control \$/acre | Spot <br> Spray <br> \$/acre | Insect <br> 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 |  |  |  |



## Pasture Land Costs



Other Capital Costs


## Fence Costs

|  | Number of miles of Fence Required |  | Cost Per Mile of Fence |  |  | Improved Pasture Total Cost | UnImproved Pasture Total Cost |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Improved | Unimproved Pasture | Materials | Labour | Equipment |  |  |
| 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 | \$0 |
|  |  |  |  |  | Total | \$19,677 | \$14,871 |
| For more information on fence costs, | ck Fence Co | st Calculator |  |  |  |  |  |

## Other Assumptions

## Land Development Costs:

Includes: (eg. (\$112.00 custom land preparation $+\$ 42.50$ grass seed $+\$ 11.25$ oat nurse crop seed $+\$ 99.72$ est. fertilizer $+\$ 10.00$ custom fertilizer applic. $+\$ 14.00$ est. herbicide $+\$ 8.00$ custom herbicide applic. -
$\$ 120.00$ greenfeed forage value) / 10 productive years $=\$ 17.75$ 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 $\times 1 \%$ 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 9\% for six months.

## Land Cost:

Based on approximate average pasture values. Budget assumed improved pasture $25 \%$ financed at $8 \%$ for 25 years, plus $0 \%$ land equity opportunity cost and unimproved pasture $25 \%$ financed at $8 \%$ 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 \$72,500 Mortgage) $=\$ 6,792$ payment per year) / 160 acres $=\$ 42.45 /$ acre
Unimproved Pasture (based on $\$ 32,500$ Mortgage) $=\$ 3,045$ payment per year) $/ 160$ acres $=\$ 19.03 /$ acre Land Investment Costs:
Improved Pasture $=($ Total Inv. $\times$ Owned Equity $\%) \times$ Inv. Rate \% (eg. $((\$ 1,813 \times 75 \%) \times 0 \%)=\$ 0.00 /$ acre
Unimproved Pasture $=($ Total Inv. $x$ Owned Equity \%) x Inv. Rate \% (eg. $((\$ 813 \times 75 \%) \times 0 \%)=\$ 0.00 /$ acre

## Other Capital Investment Cost:

Investment Cost $=\underline{\text { Original Cost }+ \text { Salvage Value }} \mathrm{x}$ Investment Rate 2
Other Capital Investment Costs:
Improved Pasture: $(((\$ 27,677+\$ 0.00) / 2) \times 2.5 \%$ investment rate $) / 160$ acres $=\$ 2.16$ cost per acre
Unimproved Pasture: $(((\$ 22,871+\$ 0.00) / 2) \times 2.5 \%$ investment rate $) / 160$ acres $=\$ 1.79$ cost per acre

## Other Capital Depreciation Cost:

Depreciation Cost $=\underline{\text { Original Cost }- \text { Salvage Value }}$
Useful Life
Other Capital Depreciation Costs:
Improved Pasture: ( $(\$ 27,677-\$ 0.00) / 20$ years useful life) / 160 pasture acres $=\$ 8.65$ cost per acre Unimproved 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 $\times 1.25$ Metabolic Animal Unit Value $\times 4.5$ months $=529$
Total AUM's - Available Per Acre $=529$ Total AUM's $/ 160$ acres $=3.31$
Total Pasture Cost Per AUM $=\$ 17873.71$ cost per acre $/ 529$ AUM $=\$ 33.79$

## Contact Us

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## 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)
2. Animal Unit Equivalents**
(Average weight of animals^. $75 \div 1000^{\wedge} .75 \mathrm{lbs}$ )
3. AUM's available per acre for I month (1 $\div 2$ )
4. Grazing period in months
5. AUM's available per acre for total period $(3 \div 4)$
6. Total Acres in Pasture 160
7. Carrying Capacity of Pasture (\# of Head) (5 x 6)

* 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 135 days |  |  | Unimproved Pasture Carrying Capacity (based on 160 acres, 1350 lb animals for 135 days |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Vegetative Associations |  |  |  | Soil Group |  |  | oil Group |  |  | oil Group |  |
|  |  |  | 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 | 22 |
|  | 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 | - | - | - | 22 | 34 | 28 |
|  | Transitional grassland | 6 | 1.2 | 1.2 | 1.4 | - | - | - | 34 | 34 | 39 |
|  | Lowland meadow | 7 | 1.6 | 1.8 | 1.8 | - | - | - | 45 | 51 | 51 |
| Improved | Hay regrowth | 8 | 0.5 | 0.8 | 1.0 | 14 | 22 | 28 | - | - | - |
|  | Poor tame forage | 9 | 1.4 | 1.4 | 1.6 | 39 | 39 | 45 | - | - | - |
|  | 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 | Annual crop land | 12 | 0.0 | 3.0 | 3.0 | 0 | 85 | 85 | - | - | - |
|  | 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 | - | - | - |
| Source Manitoba Crown Lands <br> Estimated Carrying Capacity: Pick the soil group and vegetative association (from the table above) that most closely represents your land. |  |  |  |  |  |  |  |  |  |  |  |



## Contact us

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