

# Guidelines for Estimating Alfalfa Hay Production Costs

**Date: March, 2009**

This guide is designed to provide planning information and a format for calculating the costs of production in a forage enterprise. The production costs included in this budget were not obtained from a survey of producers, nor do they necessarily represent the average cost of production for alfalfa hay in Manitoba.

The assumptions on which the costs were calculated are clearly defined in the supporting pages. They were developed by using a combination of recommended practices and methods followed by many producers.

When interpreting the costs contained in this budget for an individual situation, adjustments may be necessary. Each assumption must be examined and adjustments made where necessary.

The budget can be useful for comparative purposes. Comparison of costs can be made with other similar farms; comparing farm costs over time; or comparing actual results with projections made earlier.

**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.

## Alfalfa Hay Cost of Production Input Assumptions

### Land

Total Acres **300** acres  
 Market Value per acre **\$625** \$/acre

<u>Years of Production</u>	<u>Yield</u> <u>tons/acre</u>
1 (establishment year)	<b>1.2</b>
2	<b>2.7</b>
3	<b>3.1</b>
4	<b>3.1</b>
5	<b>2.9</b>
6	<b>2.7</b>
Total Yield	15.7 tons
Average Yield	2.6 tons/acre
Years rotation	6.0 years

### **Seed Cost**

Certified alfalfa seed cost per lb **\$3.25** \$/lb  
 Seeding rate(lbs/acre) **10.0** lbs/acre  
 Custom seeding cost (\$/acre) **\$0.00** \$/acre

### **Fertilizer**

	<u>\$/lb</u>	<u>Establish</u> <u>lbs/acre</u>	<u>Annual</u> <u>lbs/acre</u>
Nitrogen	<b>\$0.55</b>	<b>0</b>	<b>0</b>
Phosphate	<b>\$0.72</b>	<b>35</b>	<b>35</b>
Potassium	<b>\$0.350</b>	<b>30</b>	<b>30</b>
Sulfur	<b>\$0.26</b>	<b>15</b>	<b>15</b>

### **Herbicide**

	<u>\$/acre</u>
Establish/burn off	<b>\$7.00</b>
Annual	<b>\$0.00</b>

### **Field Fuel Costs**

**Fuel Price** **\$0.90**

<b>Establish Field Operations</b>	<b>Times Over</b>	<b>Width Feet</b>	<b>Speed MPH</b>	<b>Tractor HP</b>
Cultivate (fall)	1	40	5	175
Burn Off	1	60	6	100
Cultivate	1	40	5	175
Seed/fertilize	1	40	5	175
Swath	1	16	5.5	100
Bale	1	16	5	100

<b>Annual Field Operations</b>	<b>Times Over</b>	<b>Width Feet</b>	<b>Speed MPH</b>	<b>Tractor HP</b>
Fertilize	1	40	7	100
Swath	2	16	4.5	100
Bale	2	16	4	100

### **Moving Costs (Custom Rate)**

Pickup, load, unload and stack (\$/bale)	<b>\$4.00</b> \$/bale
Average round bale weight (lbs)	<b>1,500</b> lbs

### **Repairs & Maintenance**

% rate of investment	<b>2%</b>
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### **Crop Insurance**

Establish	Premium	<b>\$2.88</b> \$/acre
	\$ Coverage (/acre)	<b>\$40.00</b>
Annual	Premium (DFA 12)	<b>\$5.96</b> \$/acre
	LTA	<b>1.798</b> tons/acre
	Coverage Level	<b>70.0%</b>
	\$ Coverage (/acre)	<b>\$138.77</b>

## Land Taxes

Cost per acre **\$4.00** \$/acre

## Miscellaneous (Establish & Annual)

Miscellaneous Costs **\$5.00** \$/acre

Twine Costs **\$1.00** \$/acre

## Interest

Interest on Operating **6.5** %

Investment interest rate **3.5** %

## Capital Costs

<b>Capital Costs</b>	<b>Alfalfa Cost/Acre</b>	<b>Useful Life</b>	<b>Salvage Value</b>
Land Market Value	<b>\$625</b>		
Machinery Investment	<b>\$145</b>	<b>10</b>	<b>10%</b>
Storage Investment	<b>\$30</b>	<b>20</b>	<b>0%</b>

<b>Machinery</b>	<b>Market Value</b>	<b>% Allocated to Alfalfa</b>	<b>Allocated Alfalfa</b>
Tractor 175 hp	<b>\$150,000</b>	<b>5%</b>	<b>\$7,500</b>
Tractor 100 hp	<b>\$85,000</b>	<b>10%</b>	<b>\$8,500</b>
Cultivator	<b>\$30,000</b>	<b>5%</b>	<b>\$1,500</b>
Sprayer/fertilizer	<b>\$100,000</b>	<b>5%</b>	<b>\$5,000</b>
Truck & Trailer	<b>\$0</b>	<b>40%</b>	<b>\$0</b>
Round Baler	<b>\$35,000</b>	<b>35%</b>	<b>\$12,250</b>
Mower Conditioner	<b>\$25,000</b>	<b>35%</b>	<b>\$8,750</b>
<b>Total Machinery</b>	<b>\$425,000</b>		<b>\$43,500</b>

**Storage** **\$9,000** **100%** **\$9,000**

**Total Investment** **\$434,000** **\$52,500**

## Land Investment

Land cost /acre \$625  
Total Acres 300  
**Total Land Cost** **\$187,500** **100%** **\$187,500**

**Total Capital Investment** **\$621,500** **\$240,000**

**C. Labour**

Establish

hours/acre  
rate per hour

**0.42**  
**\$12.00**

### Alfalfa Hay Cost of Production Summary - March, 2009

A. Operating Costs	Establishment \$/acre	Annual \$/acre	Annual \$/ton	<u>Your Cost</u>
1.00 Establishment Cost <sup>1</sup>	n/a	\$27.35	\$10.52	
1.01 Seed	\$32.50	n/a	n/a	_____
1.02 Fertilizer	\$39.60	\$39.60	\$15.23	_____
1.03 Herbicide	\$7.00	\$0.00	\$0.00	_____
1.04 Field Fuel Costs	\$11.25	\$13.31	\$5.12	_____
1.05 Moving Costs	\$6.51	\$13.87	\$5.33	_____
1.06 Repairs & Maintenance	\$1.50	\$3.50	\$1.35	_____
1.07 Crop Insurance	\$2.88	\$5.96	\$2.29	_____
1.08 Land Taxes	\$4.00	\$4.00	\$1.54	_____
1.09 Miscellaneous	<u>\$6.00</u>	<u>\$6.00</u>	<u>\$2.31</u>	_____
Sub-total Operating Cost	\$111.24	\$113.59	\$43.69	_____
1.10 Interest on Operating	<u>\$3.06</u>	<u>\$3.12</u>	<u>\$1.20</u>	_____
<b>Total Operating Costs</b>	<b>\$114.30</b>	<b>\$116.71</b>	<b>\$44.89</b>	_____
<b>B. Fixed Costs</b>				
<b>2.0 Depreciation</b>				
2.01 Machinery	\$14.50	\$14.50	\$5.58	_____
2.02 Storage	\$1.50	\$1.50	\$0.58	_____
<b>3.0 Investment</b>				
3.01 Land	\$25.00	\$25.00	\$9.62	_____
3.02 Machinery	\$3.19	\$3.19	\$1.23	_____
3.03 Storage	<u>\$0.60</u>	<u>\$0.60</u>	<u>\$0.23</u>	_____
<b>Total Fixed Costs</b>	<b>\$44.79</b>	<b>\$44.79</b>	<b>\$17.24</b>	_____
<b>Total Operating and Fixed</b>	<b>\$159.09</b>	<b>\$161.50</b>	<b>\$62.13</b>	_____
<b>C. Labour</b>	<b>\$5.00</b>	<b>\$7.51</b>	<b>\$2.89</b>	_____
<b>Total Cost of Production</b>	<b>\$164.09</b>	<b>\$169.01</b>	<b>\$65.02</b>	_____

1. The cost of establishing the crop, \$164.09/acre, was spread over 6 years at \$27.35/acre/year.

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### Assumptions

1. Assumed a total of 300 acres of alfalfa hay at a market value of \$625 per acre.
2. Assumed 6 years of production with an average yield of 2.6 tons per acre.
3. Machinery and equipment for the alfalfa hay enterprise included tractors, sprayer, baler, mower conditioner and storage facilities which were valued at \$52,500 in total.
4. The budget is based on a round bale production system with outside storage.

### Alfalfa Grass Hay Cost of Production Worksheet

<b>A. Operating Costs</b>				<u><b>Your Cost</b></u>
<b>1.01 Seed</b>				
Establish		10.0	alfalfa grass mix lbs/acre	_____
	x	\$3.25	\$/lb	_____
	+	<u>\$0.00</u>	<u>\$/acre custom seeding</u>	_____
	=	<b>\$32.50</b>	<b>\$/acre</b>	_____
<b>1.02 Fertilizer</b>				
<b>Nitrogen</b>				
Establish		0.0	lbs/acre seeding year	_____
	x	<u>\$0.55</u>	<u>cost/lb</u>	_____
	=	\$0.00	\$/acre	_____
Annual		0.0	lbs/acre cropping years	_____
	x	<u>\$0.55</u>	<u>cost/lb</u>	_____
	=	\$0.00	\$/acre	_____
<b>P<sub>2</sub>O<sub>5</sub></b>				
Establish		35	lbs/acre seeding year	_____
	x	<u>\$0.72</u>	<u>cost/lb</u>	_____
	=	\$25.20	\$/acre	_____
Annual		35	lbs/acre cropping years	_____
	x	<u>\$0.72</u>	<u>cost/lb</u>	_____
	=	\$25.20	\$/acre	_____
<b>K<sub>2</sub>O</b>				
Establish		30	lbs/acre seeding year	_____
	x	<u>\$0.350</u>	<u>cost/lb</u>	_____
	=	\$10.50	\$/acre	_____
Annual		30	lbs/acre cropping years	_____
	x	<u>\$0.350</u>	<u>cost/lb</u>	_____

	=	\$10.50	\$/acre	_____
<b>Sulfur</b>				
Establish		15	lbs sulfur seeding year	_____
	x	<u>\$0.26</u>	<u>cost/lb</u>	_____
	=	\$3.90	\$/acre	_____
Annual		15	lbs/acre cropping years	_____
	x	<u>\$0.26</u>	<u>cost/lb</u>	_____
	=	\$3.90	\$/acre	_____
<b>Establish Cost</b>	=	<b>\$39.60</b>	<b>\$/acre</b>	_____
<b>Annual Cost</b>	=	<b>\$39.60</b>	<b>\$/acre</b>	_____

**1.03 Herbicide**

<b>Establish</b>		<b>\$7.00</b>	<b>\$/acre</b>	_____
<b>Annual</b>		<b>\$0.00</b>	<b>\$/acre</b>	_____

**1.04 Field Fuel Costs**

<b>Establish Field Operations</b>	<b>Times Over</b>	<b>Width feet</b>	<b>Speed mph</b>	<b>Fuel \$/ac.</b>	
Cultivate (fall)	1	40	5.0	1.86	_____
Cultivate	1	40	5.0	1.86	_____
Seed/fertilize	1	40	5.0	1.86	_____
Burn Off	1	60	6.0	0.59	_____
Swath	1	16	5.5	2.42	_____
Bale	<u>1</u>	16	5.0	<u>2.66</u>	_____
<b>Total</b>	<b>6</b>			<b>\$11.25</b>	_____

**Annual Field Operations**

Fertilize	1	40	7.0	0.76	_____
Swath	2	16	4.5	5.91	_____
Bale	<u>2</u>	16	4.0	<u>6.64</u>	_____
<b>Total</b>	<b>5</b>			<b>\$13.31</b>	_____

**1.05 Moving Costs**

**Pick up, load, unload & stack**

Establish		1.2	tons/acre	_____
	x	2,000	lbs/ton	_____
	÷	1,500	bale weight (lbs)	_____
	x	<u>\$4.00</u>	<u>\$/bale</u>	_____
	=	<b>\$6.51</b>	<b>\$/acre</b>	_____
Annual		2.6	tons/acre	_____
	x	2000	lbs/ton	_____
	÷	1,500	bale weight (lbs)	_____
	x	<u>\$4.00</u>	<u>\$/bale</u>	_____
	=	<b>\$13.87</b>	<b>\$/acre</b>	_____

**1.06 Repairs & Maintenance**

Establish*	2.0%	percentage rate	_____
	<u>\$75</u>	<u>investment/acre</u>	_____
<b>=</b>	<b>\$1.50</b>	<b>\$/acre</b>	_____

\*Investment to establish crop includes tractors, sprayer & cultivator.

Annual**	2.0%	percentage rate	_____
	<u>\$175</u>	<u>investment/acre</u>	_____
<b>=</b>	<b>\$3.50</b>	<b>\$/acre</b>	_____

\*\*Investment in annual cropping includes tractors, mower, baler, truck & trailer & storage.

**1.07 Crop Insurance (Forage Designated Area 12)**

Establish	<u>\$40</u>	<u>\$ coverage/acre</u>	_____
<b>=</b>	<b>\$2.88</b>	<b>\$/acre premium</b>	_____

Annual	1.80	LTA tons /acre	_____
	70.0%	Coverage level	_____
	<u>\$138.77</u>	<u>\$ coverage/acre</u>	_____
<b>=</b>	<b>\$5.96</b>	<b>\$/acre premium</b>	_____

**1.08 Land Taxes**

<b>=</b>	<b>\$4.00</b>	<b>\$/acre</b>	_____
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**1.09 Miscellaneous**

	\$5.00	\$/acre	_____
<b>±</b>	<u>\$1.00</u>	<u>twine cost/acre</u>	_____
<b>=</b>	<b>\$6.00</b>	<b>\$/acre</b>	_____

**1.10 Interest on operating costs**

Establish	\$111.24	subtotal operating	_____
	÷ 2	average	_____
	<u>5.5%</u>	<u>interest rate</u>	_____
<b>=</b>	<b>\$3.06</b>	<b>\$/acre</b>	_____

Annual	\$113.59	subtotal operating	_____
	÷ 2	average	_____
	<u>5.5%</u>	<u>interest rate</u>	_____
<b>=</b>	<b>\$3.12</b>	<b>\$/acre</b>	_____

**Capital Costs**

**Machinery**

Tractor	175 hp	\$150,000	5%	\$7,500	_____
Tractor	100 hp	\$85,000	10%	\$8,500	_____
Cultivator		\$30,000	5%	\$1,500	_____
Sprayer/fertilizer		\$100,000	5%	\$5,000	_____
Truck & Trailer		\$0	40%	\$0	_____
Round Baler		\$35,000	35%	\$12,250	_____

Mower Conditioner	<u>\$25,000</u>	35%	<u>\$8,750</u>	
<b>Total Machinery</b>	<b>\$425,000</b>		<b>\$43,500</b>	
<b>Storage</b>	<b>\$9,000</b>	100%	<b>\$9,000</b>	
<b>Total Investment</b>	<b>\$434,000</b>		<b>\$52,500</b>	
<b>Land Investment</b>				
Land cost /acre	\$625			
Total Acres	300			
<b>Total Land Cost</b>	<b>\$187,500</b>	100%	<b>\$187,500</b>	
<b>Total Capital Investment</b>	<b>\$621,500</b>		<b>\$240,000</b>	

**B. Fixed Costs**

**2. Depreciation**

**2.01 Machinery**

	\$43,500	machinery investment	
-	\$0	salvage value	
÷	10	years useful life	
÷	<u>300</u>	acres	
<b>=</b>	<b>\$14.50</b>	<b>\$/acre</b>	

**2.02 Storage**

	\$9,000	storage investment	
-	\$0	salvage value	
÷	20	years useful life	
÷	<u>300</u>	acres	
<b>=</b>	<b>\$1.50</b>	<b>\$/acre</b>	

**3. Investment**

**3.01 Land**

	\$625	cost/acre	
<u>x</u>	<u>4.0%</u>	<u>investment rate</u>	
<b>=</b>	<b>\$25.00</b>	<b>\$/acre</b>	

**3.02 Machinery**

	\$43,500	machinery investment	
+	\$4,350	salvage value	
÷	2	average	
÷	300	acres	
<u>x</u>	<u>4.0%</u>	<u>investment rate</u>	
<b>=</b>	<b>\$3.19</b>	<b>\$/acre</b>	

**3.03 Storage**

	\$9,000	storage investment	
+	\$0	salvage value	
÷	2	average	
÷	300	acres	

<u>x</u>	4.0%	<u>investment rate</u>	
=	<b>\$0.60</b>	<b>\$/acre</b>	

**C. Labour Cost**

Establish		0.42	hours/acre	
	<u>x</u>	<u>\$12.00</u>	<u>rate/hour</u>	
	=	<b>\$5.00</b>	<b>\$/acre</b>	

Annual		0.63	hours/acre	
	<u>x</u>	<u>\$12.00</u>	<u>rate/hour</u>	
	=	<b>\$7.51</b>	<b>\$/acre</b>	

**For more information contact your local MAFRI office.**

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