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2021 Cost of Production

# Hay: Round Bale and Silage





Guidelines For Estimating  
**Hay Production Costs - 2021**  
Round Bale Hay and Silage

**Date: May, 2021**

**\*\*revised 2021 MASC data\*\***

This guide is designed to provide planning information and a format for calculating the costs of producing a forage crop of 100% alfalfa or alfalfa grass mixture for the purpose of feeding livestock or export in Manitoba. General Manitoba Agriculture recommendations are assumed in using fertilizers and chemical inputs. These figures provide an economic evaluation of the crops and estimated yields required to cover all costs. Costs include labour, investment and depreciation, but do not include management costs, nor do they necessarily represent the average cost of production in Manitoba.

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

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 alfalfa hay crops. 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](http://www.manitoba.ca/agriculture)  
or at your nearest [ARD and MASC Service Centre](#).  
[The Farm Machinery Custom and Rental Rate 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 nearest ARD and MASC Service Centre.

Dry Hay Production Costs - 2021										
	Alfalfa Hay			Alfalfa-Grass Hay			Greenfeed Hay			Your Farm
	Annual (Years 2 to 5)			Annual (Years 2 to 8)			Annual (Years 2 to 8)			
	Production Costs			Production Costs			Production Costs			
	(as fed)	(Dry Matter-DM)		(as fed)	(DM)		(as fed)	(DM)		
	\$/acre	\$/ton	\$/ton	\$/acre	\$/ton	\$/ton	\$/acre	\$/ton	\$/ton	
<b>A. Operating Costs</b>										
Forage Seed & Treatment	-			-			-			
Nurse Crop Seed	-			-			\$18.13			
Establishment (amortized)	\$43.62 <sup>1</sup>			\$27.20 <sup>2</sup>			-			
Fertilizer	\$68.59			\$54.29			\$50.99			
Herbicide/Insecticide	\$0.00			\$0.00			\$12.00			
Fuel	\$9.09			\$6.34			\$10.73			
Machinery Operating	\$12.10			\$12.10			\$12.10			
Machinery Lease	\$2.40			\$2.40			\$2.40			
Rental and Custom	\$14.00			\$11.16			\$11.32			
Crop Insurance	\$19.39			\$12.44			\$12.21			
Twine/Net Wrap	\$5.17			\$4.07			\$4.18			
Plastic Silage Wrap	-			-			-			
Other Costs	\$2.00			\$2.00			\$2.00			
Land Taxes	\$10.00			\$10.00			\$10.00			
Interest on Operating	\$4.19			\$3.20			\$3.29			
<b>Total Operating</b>	<b>\$190.55</b>			<b>\$145.21</b>			<b>\$149.35</b>			
<b>B. Fixed Costs</b>										
Land Cost	\$44.70			\$44.70			\$44.70			
Machinery Costs	\$46.55			\$46.55			\$46.55			
Storage Costs	\$0.00			\$0.00			\$0.00			
<b>Total Fixed</b>	<b>\$91.26</b>			<b>\$91.26</b>			<b>\$91.26</b>			
<b>Total Operating &amp; Fixed</b>	<b>\$281.81</b>			<b>\$236.47</b>			<b>\$240.61</b>			
<b>C. Labour</b>										
	\$28.80			\$28.80			\$36.00			
<b>Total Costs</b>	<b>\$310.61</b>	<b>\$88.75</b>	<b>\$100.85</b>	<b>\$265.27</b>	<b>\$95.08</b>	<b>\$108.72</b>	<b>\$276.61</b>	<b>\$97.74</b>	<b>\$113.83</b>	
<b>Total Costs (\$/lb.)</b>		<b>\$0.044</b>	<b>\$0.050</b>		<b>\$0.048</b>	<b>\$0.054</b>		<b>\$0.049</b>	<b>\$0.057</b>	
<b>Total Costs (\$/1500 lb. bale)</b>	<b>\$66.09</b>			<b>\$71.69</b>			<b>\$72.79</b>			
<b>Profitability &amp; Breakeven Analysis</b>										
<b>Estimated Farmgate</b>	<b>As Fed</b>	<b>DM</b>		<b>As Fed</b>	<b>DM</b>		<b>As Fed</b>	<b>DM</b>		
Price \$ per ton	\$120.00	\$136.36		\$100.00	\$114.34		\$95.00	\$110.64		
Yield per acre (ton)	3.50	3.08		2.79	2.44		2.83	2.43		
Total Yield (tons/300 acres)	1,050	924		837	732		849	729		
<b>Gross Revenue</b>	<b>\$420.00</b>			<b>\$279.00</b>			<b>\$268.85</b>			
<b>Marginal Returns</b>	<b>\$/acre</b>	<b>(as fed)</b>	<b>(DM)</b>	<b>\$/acre</b>	<b>(as fed)</b>	<b>(DM)</b>	<b>\$/acre</b>	<b>(as fed)</b>	<b>(DM)</b>	
Over Operating Costs	\$229.45	\$65.56	\$74.50	\$133.79	\$47.95	\$54.83	\$119.50	\$42.23	\$49.18	
<b>Over Total Costs (Net Profit)</b>	<b>\$109.39</b>	<b>\$31.25</b>	<b>\$35.52</b>	<b>\$13.73</b>	<b>\$4.92</b>	<b>\$5.63</b>	<b>(\$7.76)</b>	<b>(\$2.74)</b>	<b>(\$3.19)</b>	
<b>Operating Expense Ratio</b>	<b>45.4%</b>			<b>52.0%</b>			<b>55.6%</b>			
<b>Breakeven Price (\$/ton)</b>										
Operating Costs	\$54.44	\$61.87		\$52.05	\$59.51		\$52.77	\$61.46		
<b>Total Costs</b>	<b>\$88.75</b>	<b>\$100.85</b>		<b>\$95.08</b>	<b>\$108.72</b>		<b>\$97.74</b>	<b>\$113.83</b>		
<b>Breakeven Yield (tons/acre)</b>										
Operating Costs	1.588	1.397		1.452	1.270		1.572	1.350		
<b>Total Costs</b>	<b>2.588</b>	<b>2.278</b>		<b>2.653</b>	<b>2.320</b>		<b>2.912</b>	<b>2.500</b>		
<b>Cost of Standing Hay (\$/lb.)</b>	<b>\$0.027<sup>3</sup></b>			<b>\$0.028<sup>3</sup></b>			<b>\$0.029<sup>4</sup></b>			
<b>Cost of Standing Hay (\$/ton)</b>	<b>\$54.98</b>			<b>\$55.11</b>			<b>\$58.31</b>			
<b>On-Farm Harvest Cost (\$/ton)</b>	<b>\$33.77</b>			<b>\$39.96</b>			<b>\$39.43</b>			

1. Alfalfa establishment (without nurse crop) net cost of \$174.48 (total cost minus estimated gross revenue) were amortized over 4 hay production years.

2. Alfalfa-grass establishment (with oat greenfeed nurse crop) net cost of \$190.42 (total cost minus estimated gross revenue) were amortized over 7 hay production years.

3. Cost of alfalfa and alfalfa-grass standing hay (includes: establishment, fertilizer, pesticide, land taxes, crop insurance, 5% of fuel and labour, 50% of other costs, and land costs.)

4. Cost of greenfeed standing hay (includes: seed; fertilizer; pesticide; land taxes; crop insurance; 40% of fuel; 20% of labour, machinery lease, and machinery operating; 50% of other costs, and land 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 utilization of this information is the responsibility of the user.

Baled Silage Production Costs - 2021										
	Alfalfa Baled Silage			Alfalfa-Grass Baled Silage			Greenfeed Baled Silage			Your Farm
	Annual (Years 2 to 5)			Annual (Years 2 to 8)						
	Production Costs			Production Costs			Production Costs			
	\$/acre	(as fed) \$/ton	(DM) \$/ton	\$/acre	(as fed) \$/ton	(DM) \$/ton	\$/acre	(as fed) \$/ton	(DM) \$/ton	
<b>A. Operating Costs</b>										
Forage Seed & Treatment	-			-			-			
Nurse Crop Seed	-			-			\$18.13			
Establishment (amortized)	\$48.59 <sup>1</sup>			\$31.76 <sup>2</sup>			-			
Fertilizer	\$68.59			\$54.29			\$50.99			
Herbicide/Insecticide	\$0.00			\$0.00			\$12.00			
Fuel	\$9.71			\$7.62			\$12.02			
Machinery Operating	\$16.77			\$16.77			\$16.77			
Machinery Lease	\$2.40			\$2.40			\$2.40			
Rental and Custom	\$20.67			\$16.35			\$16.56			
Crop Insurance	\$19.39			\$12.44			\$12.21			
Twine/Net Wrap	\$7.59			\$6.05			\$6.05			
Plastic Silage Wrap	\$25.27			\$20.14			\$20.14			
Other Costs	\$2.00			\$2.00			\$2.00			
Land Taxes	\$10.00			\$10.00			\$10.00			
Interest on Operating	\$5.20			\$4.05			\$4.03			
<b>Total Operating</b>	<b>\$236.18</b>			<b>\$183.88</b>			<b>\$183.29</b>			
<b>B. Fixed Costs</b>										
Land Cost	\$44.70			\$44.70			\$44.70			
Machinery Costs	\$64.95			\$64.95			\$64.95			
Storage Costs	\$0.00			\$0.00			\$0.00			
<b>Total Fixed</b>	<b>\$109.65</b>			<b>\$109.65</b>			<b>\$109.65</b>			
<b>Total Operating &amp; Fixed</b>	<b>\$345.83</b>			<b>\$293.53</b>			<b>\$292.94</b>			
<b>C. Labour</b>	\$33.60			\$33.60			\$40.80			
<b>Total Costs</b>	<b>\$379.43</b>	<b>\$55.07</b>	<b>\$109.98</b>	<b>\$327.13</b>	<b>\$60.02</b>	<b>\$119.83</b>	<b>\$333.74</b>	<b>\$60.46</b>	<b>\$120.92</b>	
<b>Total Costs (\$/lb.)</b>		<b>\$0.028</b>	<b>\$0.055</b>		<b>\$0.030</b>	<b>\$0.060</b>		<b>\$0.030</b>	<b>\$0.060</b>	
<b>Total Costs (\$/2000 lb. bale)</b>	<b>\$54.99</b>			<b>\$59.48</b>			<b>\$60.68</b>			

Profitability & Breakeven Analysis												
Estimated Farmgate	As Fed		DM		As Fed		DM		As Fed		DM	
	\$/acre	\$/ton	\$/ton	\$/acre	\$/ton	\$/ton	\$/acre	\$/ton	\$/ton	\$/acre	\$/ton	\$/ton
Price \$ per ton	\$65.00	\$129.81		\$60.00	\$119.78		\$57.50	\$115.00				
Yield per acre (ton)	6.89	3.45		5.45	2.73		5.52	2.76				
Total Yield (tons/300 acres)	2,067	1,035		1,635	819		1,656	828				
<b>Gross Revenue</b>	<b>\$447.85</b>			<b>\$327.00</b>			<b>\$317.40</b>					
<b>Marginal Returns</b>		(as fed)	(DM)		(as fed)	(DM)		(as fed)	(DM)			
Over Operating Costs	\$211.67	\$30.72	\$61.35	\$143.12	\$26.26	\$52.43	\$134.11	\$24.29	\$48.59			
Over Total Costs (Net Profit)	\$68.42	\$9.93	\$19.83	(\$0.13)	(\$0.02)	(\$0.05)	(\$16.34)	(\$2.96)	(\$5.92)			
<b>Operating Expense Ratio</b>	<b>52.7%</b>			<b>56.2%</b>			<b>57.7%</b>					
<b>Breakeven Price (\$/ton)</b>												
Operating Costs	\$34.28	\$68.46		\$33.74	\$67.35		\$33.21	\$66.41				
<b>Total Costs</b>	<b>\$55.07</b>	<b>\$109.98</b>		<b>\$60.02</b>	<b>\$119.83</b>		<b>\$60.46</b>	<b>\$120.92</b>				
<b>Breakeven Yield (tons/acre)</b>												
Operating Costs	3.633	1.819		3.065	1.535		3.188	1.594				
<b>Total Costs</b>	<b>5.837</b>	<b>2.923</b>		<b>5.452</b>	<b>2.731</b>		<b>5.804</b>	<b>2.902</b>				
<b>Cost of Standing Hay (\$/lb.)</b>	<b>\$0.014</b> <sup>3</sup>			<b>\$0.015</b> <sup>3</sup>			<b>\$0.015</b> <sup>4</sup>					
<b>Cost of Standing Hay (\$/ton)</b>	<b>\$28.70</b>			<b>\$29.12</b>			<b>\$30.50</b>					
<b>On-Farm Harvest Cost (\$/ton)</b>	<b>\$26.37</b>			<b>\$30.90</b>			<b>\$29.96</b>					

1. Alfalfa establishment (without nurse crop) net cost of \$194.35 (total cost minus estimated gross revenue) were amortized over 4 hay production years.

2. Alfalfa-grass establishment (with oat greenfeed nurse crop) net cost of \$222.31 (total cost minus estimated gross revenue) were amortized over 7 hay production years.

3. Cost of alfalfa and alfalfa-grass standing silage (includes: establishment, fertilizer, pesticide, land taxes, 5% of fuel and labour, 50% of other costs, and land costs.)

4. Cost of greenfeed standing silage (includes: seed; fertilizer; pesticide; land taxes; crop insurance; 40% of fuel; 20% of labour, machinery lease, and machinery operating; 50% of other costs, and land costs.)

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### Forage Establishment Cost Summary - 2021

	Alfalfa Hay Establ. <sup>1</sup> \$/acre	Alfalfa-Grass Hay Establ. <sup>2</sup> \$/acre	Alfalfa Baled Silage Establ. <sup>3</sup> \$/acre	Alfalfa-Grass Baled Silage Establ. <sup>4</sup> \$/acre	Your Farm
<b>A. Operating Costs</b>					
Forage Seed & Treatment	\$42.50	\$36.00	\$42.50	\$36.00	_____
Nurse Crop Seed	-	\$9.06	-	\$9.06	_____
Establishment (amortized)	-	-	-	-	_____
Fertilizer	\$68.59	\$61.86	\$68.59	\$61.86	_____
Herbicide/Insecticide	\$25.00	\$25.00	\$25.00	\$25.00	_____
Fuel	\$14.36	\$11.75	\$14.98	\$12.57	_____
Machinery Operating	\$12.10	\$12.10	\$15.28	\$16.77	_____
Machinery Lease	\$2.40	\$2.40	\$2.40	\$2.40	_____
Rental and Custom	\$8.00	\$7.20	\$11.82	\$10.56	_____
Crop Insurance	\$5.00	\$5.00	\$5.00	\$5.00	_____
Twine/Net Wrap	\$2.93	\$2.64	\$4.33	\$3.87	_____
Plastic Silage Wrap	-	-	\$14.43	\$12.89	_____
Other Costs	\$2.00	\$2.00	\$2.00	\$2.00	_____
Land Taxes	\$10.00	\$10.00	\$10.00	\$10.00	_____
Interest on Operating	<u>\$4.34</u>	<u>\$4.16</u>	<u>\$4.87</u>	<u>\$4.68</u>	_____
<b>Total Operating</b>	<b>\$197.22</b>	<b>\$189.17</b>	<b>\$221.19</b>	<b>\$212.66</b>	_____
<b>B. Fixed Costs</b>					
Land Cost	\$44.70	\$44.70	\$44.70	\$44.70	_____
Machinery Costs	\$46.55	\$46.55	\$64.95	\$64.95	_____
Storage Costs	<u>\$0.00</u>	<u>\$0.00</u>	<u>\$0.00</u>	<u>\$0.00</u>	_____
<b>Total Fixed</b>	<b>\$91.26</b>	<b>\$91.26</b>	<b>\$109.65</b>	<b>\$109.65</b>	_____
<b>Total Operating &amp; Fixed</b>	<b>\$288.48</b>	<b>\$280.42</b>	<b>\$330.85</b>	<b>\$322.31</b>	_____
<b>C. Labour</b>	<b>\$36.00</b>	<b>\$36.00</b>	<b>\$40.80</b>	<b>\$40.80</b>	_____
<b>Total Costs</b>	<b>\$324.48</b>	<b>\$316.42</b>	<b>\$371.65</b>	<b>\$363.11</b>	_____
<b>Total Costs (\$/lb.)</b>					

### Profitability & Breakeven Analysis

<b>Estimated Farmgate</b>					
Price \$ per ton	<b>\$75.00</b>	<b>\$70.00</b>	<b>\$45.00</b>	<b>\$40.00</b>	_____
Yield per acre (ton)	<b>2.00</b>	<b>1.80</b>	<b>3.94</b>	<b>3.52</b>	_____
<b>Gross Revenue</b>	<b>\$150.00</b>	<b>\$126.00</b>	<b>\$177.30</b>	<b>\$140.80</b>	_____
<b>Marginal Returns</b>					
	<b>\$/acre</b>	<b>\$/acre</b>	<b>\$/acre</b>	<b>\$/acre</b>	
Over Operating Costs	(\$47.22)	(\$63.17)	(\$43.89)	(\$71.86)	_____
<b>Over Total Costs (Net Profit)</b>	<b>(\$174.48)</b>	<b>(\$190.42)</b>	<b>(\$194.35)</b>	<b>(\$222.31)</b>	_____
<b>Operating Expense Ratio</b>	<b>131.5%</b>	<b>150.1%</b>	<b>124.8%</b>	<b>151.0%</b>	_____
<b>Establishment Cost (amortized)</b>					
<b>Years of Production</b>	<b>4</b>	<b>7</b>	<b>4</b>	<b>7</b>	_____

1. Alfalfa hay establishment (without nurse crop) net cost of \$174.48 (total cost minus estimated gross revenue) were amortized over 4 hay production years.

2. Alfalfa-grass hay establishment (with oat greenfeed nurse crop) net cost of \$190.42 (total cost minus estimated gross revenue) were amortized over 7 hay production years.

3. Alfalfa silage establishment (without nurse crop) net cost of \$194.35 (total cost minus estimated gross revenue) were amortized over 4 hay production years.

4. Alfalfa-grass silage establishment (with oat greenfeed nurse crop) net cost of \$222.31 (total cost minus estimated gross revenue) were amortized over 7 hay production years.

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### Baled Silage Wrapper Cost Summary (\$ per Bale)

Increase/Decrease # Bales Wrapped per Year 25%

Based on # Bales Wrapped Per Year	Alfalfa Baled Silage			Alfalfa-Grass Baled Silage		
	1,656	2,070	2,588	1,320	1,650	2,063
<b>Cost per Wrapped Silage Bale</b>						
Plastic Silage Wrap Cost	\$3.66	\$3.66	\$3.66	\$3.66	\$3.66	\$3.66
Silage Wrapper - Fuel Usage	\$0.23	\$0.23	\$0.23	\$0.23	\$0.23	\$0.23
Machinery Costs	\$3.33	\$2.67	\$2.13	\$4.18	\$3.34	\$2.68
Labour (Additional for wrapper only)	<u>\$0.70</u>	<u>\$0.70</u>	<u>\$0.70</u>	<u>\$0.87</u>	<u>\$0.87</u>	<u>\$0.87</u>
<b>Total (\$ per bale)</b>	<b>\$7.92</b>	<b>\$7.26</b>	<b>\$6.72</b>	<b>\$8.95</b>	<b>\$8.11</b>	<b>\$7.44</b>

### Agrilinsurance Analysis

[MASC Forage Region Map](#)

[MASC Forage Insurance](#)

Forage Region 6 Risk Area 14	Alfalfa		Alfalfa Grass		Greenfeed 80% Coverage
	<=4 years		>4 years		
	Select Hay	Basic Hay High - \$94/tonne	Select Hay	Basic Hay High - \$94/tonne	

Your Farm \_\_\_\_\_

#### Agrilinsurance

Probable Yield - IC (tons/acre)	2.644	1.647	1.483	1.647	2.100
Coverage per acre (tons)	2.115	1.318	1.186	1.318	1.680
Dollar Coverage per acre	\$358.80	\$112.39	\$166.77	\$112.39	\$161.60
Premium (\$/Acre)	\$19.39	\$5.76	\$12.44	\$5.76	\$11.69
<b>Premium Cost (% of Insured)</b>	<b>5.4%</b>	<b>5.1%</b>	<b>7.5%</b>	<b>5.1%</b>	<b>7.2%</b>

#### Costs Not Covered By Agrilinsurance

Operating Costs	\$0.00	\$78.16	\$0.00	\$32.82	\$0.00
Operating & Fixed Costs	\$0.00	\$169.42	\$69.70	\$124.07	\$79.01
<b>Total Costs</b>	<b>\$0.00</b>	<b>\$198.22</b>	<b>\$98.50</b>	<b>\$152.87</b>	<b>\$115.01</b>

#### Agrilinsurance Risk Ratio

(Agrilinsurance Coverage / Cost)

Operating Costs	188%	59%	115%	77%	108%
<b>Total Costs</b>	<b>116%</b>	<b>36%</b>	<b>63%</b>	<b>42%</b>	<b>58%</b>

### Risk & Sensitivity Analysis (Stress Test)

Percent Market Price Change -5.0%

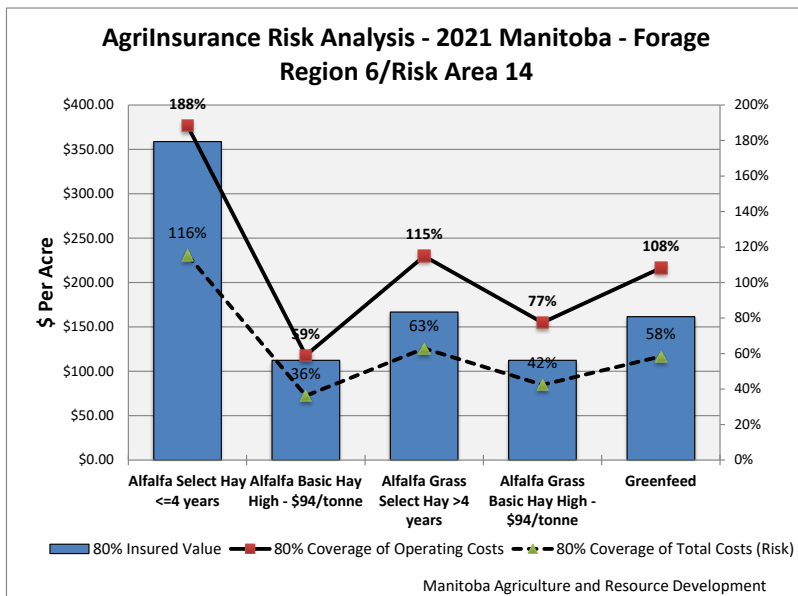
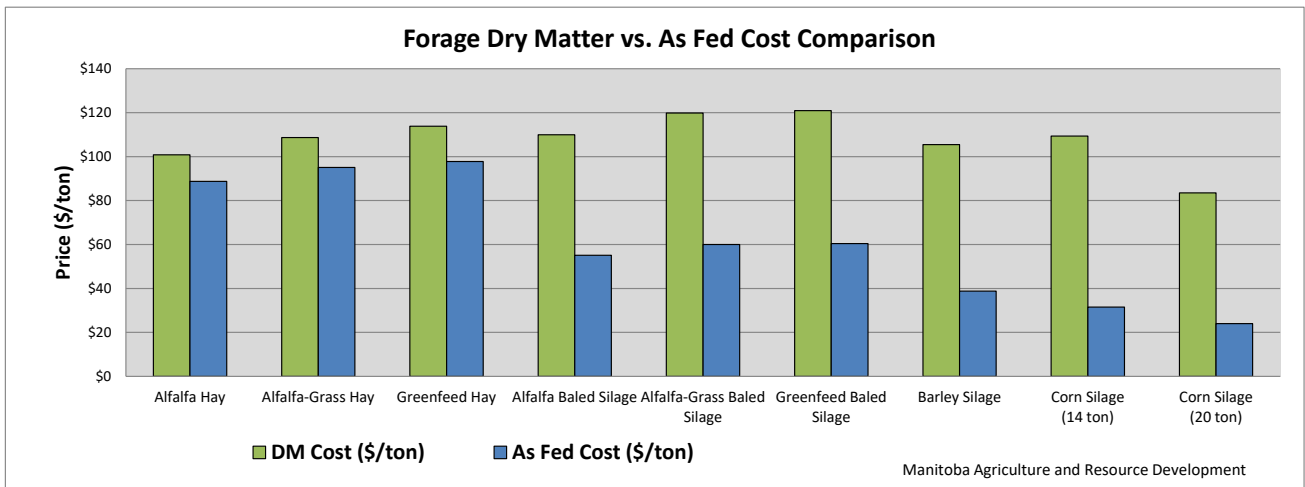
Percent Crop Yield Change -10%

	Alfalfa Hay	Alfalfa-Grass Hay	Greenfeed Hay	Your Farm
Market Price (\$ per unit)	\$114.00	\$95.00	\$90.25	_____
Yield (per acre)	3.15	2.51	2.55	_____

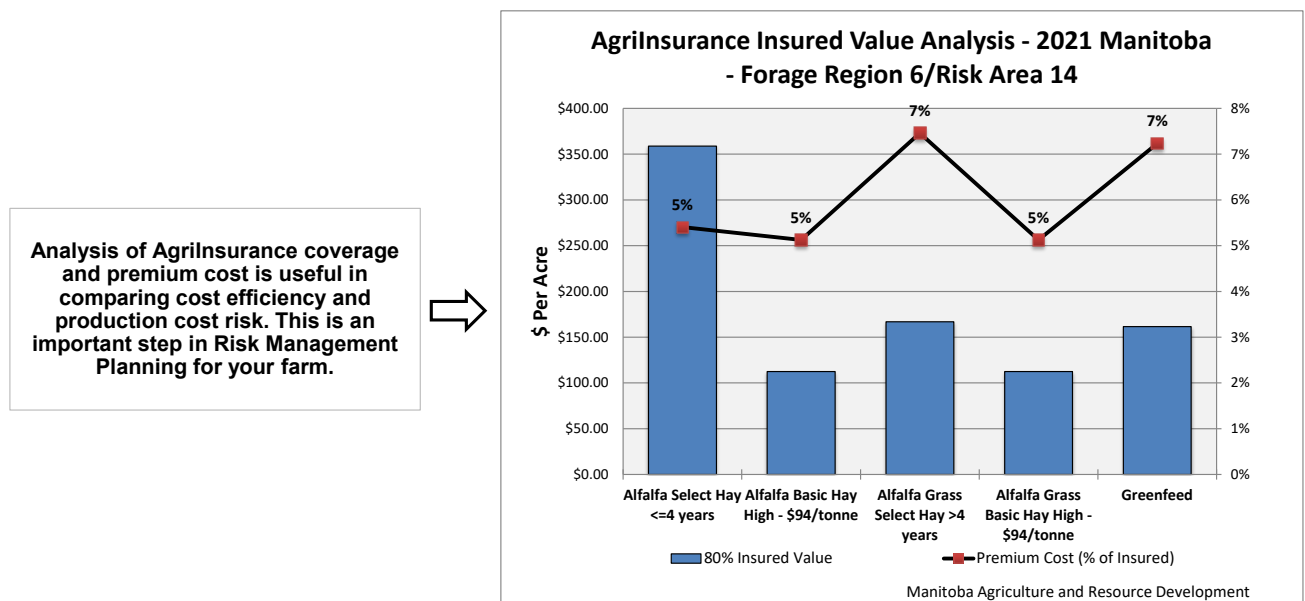
#### Stress Test Scenario = Market Price Down 5%, and Crop Yield Down 10%

Net Profit (Loss)	\$48.49	(\$26.82)	(\$46.47)	_____
<b>Operating Expense Ratio</b>	<b>53.1%</b>	<b>60.9%</b>	<b>64.9%</b>	_____

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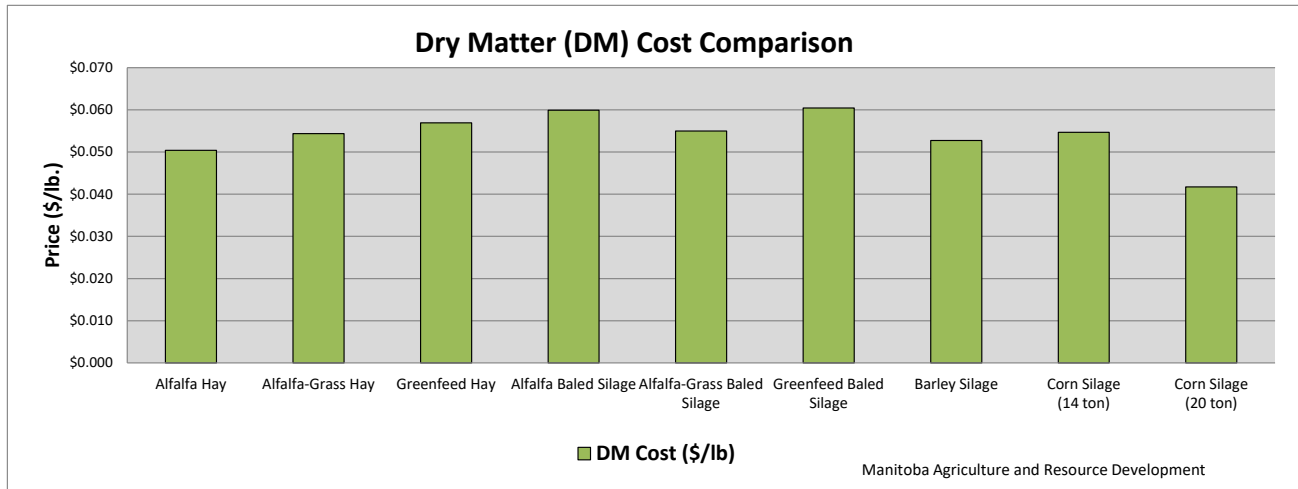
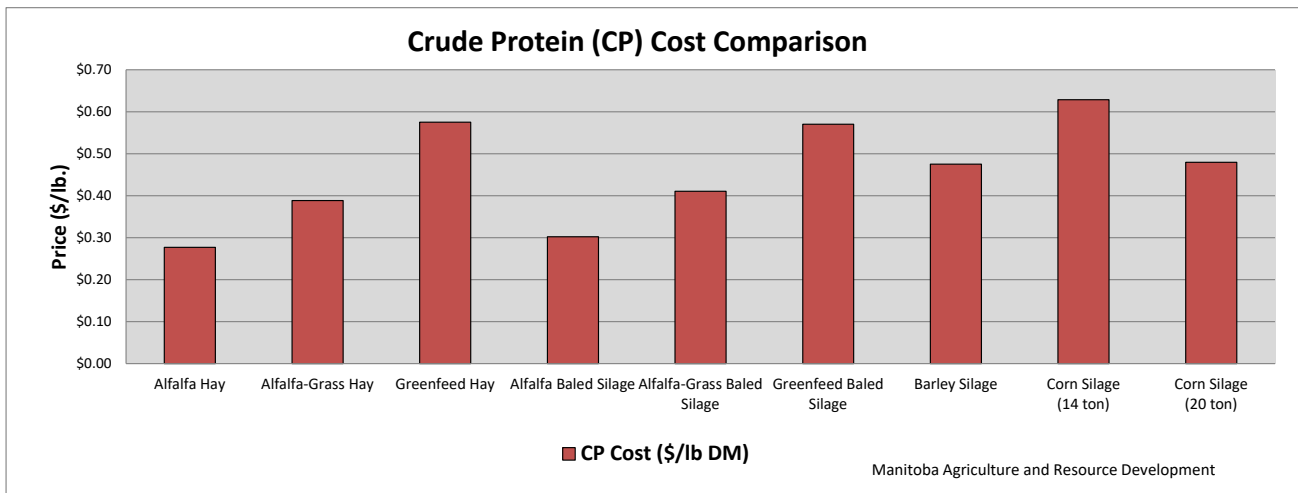
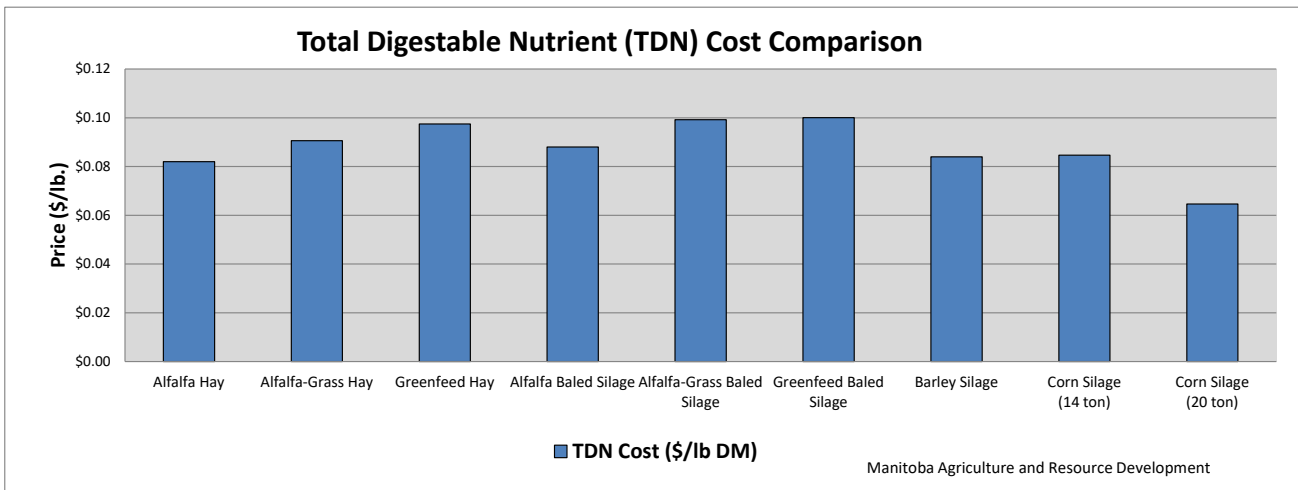


Analysis of your AgrilInsurance coverage of operating and total costs is an important step in Risk Management Planning for your farm.



Analysis of AgrilInsurance coverage and premium cost is useful in comparing cost efficiency and production cost risk. This is an important step in Risk Management Planning for your farm.





**Estimated Yield of Forage - Tons per Acre <sup>1</sup>**

	Years	Dry Hay			Wrapped Bale Silage		
		Alfalfa tons/acre	Alfalfa-Grass tons/acre	Greenfeed tons/acre	Alfalfa tons/acre	Alfalfa-Grass tons/acre	Greenfeed tons/acre
(establishment year)	1	2.0	1.8	2.83	3.94	3.52	5.52
	2	3.6	3.2		7.09	6.27	
	3	3.6	3.2		7.09	6.27	
	4	3.6	3.0		7.09	5.87	
	5	3.2	2.8		6.30	5.48	
	6		2.6			5.09	
	7		2.4			4.70	
	8		2.3			4.50	
	9						
	10						
	11						
<b>Total Yield (tons)</b>		14.0	19.5	2.83	27.6	38.2	5.52
<b>Average Yield (tons/acre)</b>		3.50	2.79	2.83	6.89	5.45	5.52
<b>Avg. Dry Matter Yield (tons/acre)</b>		3.08	2.44	2.43	3.45	2.73	2.76
<b>Bales (per acre)</b>		4.7	3.7	3.8	6.9	5.5	5.5
<b>Years production</b>		4	7	1	4	7	1
<b>Years rotation</b>		5	8	1	5	8	1
<b>AgrilInsurance - Individual Coverage</b>		1.00	1.00	1.00	1.00	1.00	1.00
		<b>Dry Hay</b>			<b>Wrapped Silage</b>		
Bale Weight (lbs.)		1,500			2,000		
Estimated Storage Loss		20%			5%		

**Forage Analysis**

	Dry Hay			Wrapped Bale Silage		
	Alfalfa	Alfalfa-Grass	Greenfeed	Alfalfa	Alfalfa-Grass	Greenfeed
Crude protein DM (CP)%	18.2	14.0	9.9	18.2	14.6	10.6
Energy DM (TDN) %	61.5	60.0	58.4	62.5	60.4	60.4
As fed moisture %	12.1	12.6	14.2	50.0	50.0	50.0

1. Users are reminded to adjust fertilizer rates when making changes to forage yields.  
Forage yields are based on Forage Region #6 average yields with an IC of 1.25. Baled Silage DM yields are increased 12%.

### Seed & Treatment

<u>Crop</u>	<u>Seeding Rate</u> <u>per Acre</u>	<u>Price</u> <u>per Unit</u>	<u>Cost</u> <u>per Acre</u>
<b>Alfalfa Hay</b>			
Alfalfa hay	10 lb.	\$4.25 /bu	\$42.50
<b>Alfalfa-Grass Hay</b>			
Alfalfa-grass hay	10 lb.	\$3.60 /lb.	\$36.00
Oat greenfeed (nurse crop)	1.25 bu	\$7.25 /bu	\$9.06
<b>Greenfeed Hay</b>			
Oats	2.50 bu	\$7.25 /bu	\$18.13

### Fertilizer<sup>1</sup>

<u>Fertilizer Type</u>	<u>Bulk Price</u> <u>\$/tonne</u>	<u>Actual Nutrient</u> <u>\$/lb.</u>	<u>Nitrogen</u> <u>Usage</u>	<u>Sulphur</u> <u>Usage</u>
Nitrogen: (urea) 46-0-0	\$475	\$0.468	100%	-
Nitrogen: (NH3) 82-0-0	\$735	\$0.407	0%	-
Nitrogen: (liquid) 28-0-0	\$280	\$0.454	0%	-
Phosphorus: 11-52-0	\$630	\$0.450	-	-
Potash: 0-0-60	\$460	\$0.348	-	-
Sulphur: 20.5-0-0-24	\$405	\$0.365	-	100%
MES S15: 13-33-0-15	\$635	\$0.523	-	0%

#### Amount of Actual Pounds of Elements Applied Per Acre

<u>Crop</u>	<u>Nitrogen</u>		<u>Phosphorus</u>		<u>Potash</u>		<u>Sulphur</u>		<u>Total</u> <u>\$/acre</u>
	<u>lbs.</u>	<u>\$/acre</u>	<u>lbs.</u>	<u>\$/acre</u>	<u>lbs.</u>	<u>\$/acre</u>	<u>lbs.</u>	<u>\$/acre</u>	
<b>Alfalfa Hay</b>									
Alfalfa hay	0	\$0.00	60	\$32.97	65	\$22.60	17	\$13.01	\$68.59
<b>Alfalfa-Grass Hay</b>									
Alfalfa-grass hay	0	\$0.00	45	\$24.73	52	\$18.08	15	\$11.48	\$54.29
Oat greenfeed (nurse crop)	50	\$12.46	50	\$27.48	30	\$10.43	15	\$11.48	\$61.86
<b>Greenfeed Hay</b>									
Oats	80	\$34.50	30	\$16.49	0	\$0.00	0	\$0.00	\$50.99

The fertilizer recommendation will vary depending on the soil type, climate and crop rotation. Manitoba Agriculture recommends that soil test sampling and analysis be conducted each year to produce a better baseline for fertility. On many Manitoba soil types, potash application can be reduced based on soil test results. Custom soil sampling and analysis typically costs \$1.00 to \$2.00/acre.

1. Users are reminded to adjust silage yields when making changes to fertilizer rates.

### Chemicals

<u>Crop</u>	<u>Weed</u> <u>Control</u> <u>\$/acre</u>	<u>Insect</u> <u>Control</u> <u>\$/acre</u>	<u>Forage</u> <u>Removal</u> <u>\$/acre</u>	<u>Total</u> <u>Cost</u> <u>\$/acre</u>
<b>Alfalfa Hay</b>				
Alfalfa hay	\$0.00	\$0.00		\$0.00
Alfalfa establishment	\$15.00	\$0.00	\$10.00	\$25.00
<b>Alfalfa-Grass Hay</b>				
Alfalfa-grass hay	\$0.00	\$0.00		\$0.00
Oat greenfeed (nurse crop)	\$15.00	\$0.00	\$10.00	\$25.00

**Operating Costs**

Interest Rate on Operating	<b>4.50%</b>	Twine/net wrap cost per unit	<b>\$55.00</b>
Hay machinery repair	<b>3.50%</b> (% of total investment)	Bales per unit	<b>50</b> (\$1.10/bale)
Land Taxes (\$/acre)	<b>\$10.00</b>	Plastic Silage Wrap Cost	<b>\$130.00</b> (per roll)
Fuel Cost (\$/litre)	<b>\$0.90</b>	Bales per Roll Silage Wrap	<b>35.5</b> (bales/roll)
Labour Cost per Hour	<b>\$24.00</b>	Silage Wrapper - Fuel Usage	<b>0.26</b> (Litres / bale)

**Dry Hay**

**Wrapped Bale Silage**

	Alfalfa Hay		Alfalfa Grass Hay		Greenfeed Hay	Alfalfa Hay		Alfalfa Grass Hay		Greenfeed Hay
	Establishment	Production	Establishment	Production	Production	Establishment	Production	Establishment	Production	Production
<b>Field Fuel Cost (\$/acre)</b>	\$14.36	\$9.09	\$11.75	\$6.34	\$10.73	\$15.28	\$10.70	\$12.57	\$7.62	\$12.02
<b>Crop Insurance<sup>1</sup> (\$/acre)</b>	Select Hay		Select Hay		80% Coverage					
	\$5.00	\$19.39	\$5.00	\$12.44	\$12.21	\$5.00	\$19.39	\$5.00	\$12.44	\$12.21
<b>Other Costs (\$/acre)</b>	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
<b>Rental and Custom Work</b>										
Seeding (\$/acre)	\$0.00	-	\$0.00	-	\$0.00	\$0.00	-	\$0.00	-	\$0.00
Application (\$/acre)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Mower/Conditioner (\$/acre)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Baling (\$/bale)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Bale Moving (\$/bale)	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00
General (\$/acre)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Total (\$/acre)</b>	<b>\$8.00</b>	<b>\$14.00</b>	<b>\$7.20</b>	<b>\$11.16</b>	<b>\$11.32</b>	<b>\$11.82</b>	<b>\$20.67</b>	<b>\$10.56</b>	<b>\$16.35</b>	<b>\$16.56</b>
<b>Labour Hours per Acre</b>										
Hours per acre	1.5	1.2	1.5	1.2	1.5	1.7	1.4	1.7	1.4	1.7
<b>Total (\$/acre)</b>	<b>\$36.00</b>	<b>\$28.80</b>	<b>\$36.00</b>	<b>\$28.80</b>	<b>\$36.00</b>	<b>\$40.80</b>	<b>\$33.60</b>	<b>\$40.80</b>	<b>\$33.60</b>	<b>\$40.80</b>

1. Crop insurance: (2021 rates) Forage Establishment Insurance for \$80/ac coverage. Annual Insurance for Alfalfa Select Hay coverage in MASC (Forage Region 6) with LTAY <=4 years yield=2.644 tons/acre and for Alfalfa Grass Select Hay coverage with LTAY >4 years yield=1.483 tons/acre. Annual Insurance for Greenfeed 80% Coverage coverage in MASC (Risk Area 14) with LTAY yield=2.1 tons/acre including \$0.52/acre EMI coverage.

**Field Fuel Usage**

Crop	L/acre	Number of Field Operations									Trucks
		cultivate	tandem disk	harrow	air drill	SP sprayer	hay rake	hay bine	round baler	spin spreader	3/4 ton pickup
<b>Alfalfa Hay</b>		<b>1.29</b>	<b>1.85</b>	<b>0.75</b>	<b>2.42</b>	<b>0.42</b>	<b>0.26</b>	<b>1.48</b>	<b>1.32</b>	<b>0.42</b>	<b>0.5</b>
Alfalfa hay	10.10	0	0	0	0	0	3	3	3	1	0.5
Alfalfa establishment	15.95	1	2	2	1	1	2	2	2	0	0.5
<b>Alfalfa-Grass Hay</b>											
Alfalfa-grass hay	7.04	0	0	0	0	0	2	2	2	1	0.5
Oat greenfeed (nurse crop)	13.05	1	2	2	1	1	0	1	1	1	0.5
<b>Greenfeed Hay</b>											
Oats	11.92	1	0	1	1	2	2	2	2	0	0.5

Guidelines: Hay Production Costs

Fixed Costs			
<b>Land</b>			
Average Land value (\$/acre)	\$2,000		
Dry Hay Crop acres	300		
Baled Silage Crop acres	300		
Owned Land Equity	85%		
Land Financed (\$300 per acre)	15%		
Land Opportunity Cost (Investment Rate)	1.50%		
<b>Land cost (\$/acre)</b>			
Finance Rate & Term	4.000%	25 Years	
Principle & Interest Cost	\$19.20		
Owned Land Opportunity Cost	\$25.50		
<b>Total Cost</b>	<b>\$44.70</b>		
<b>Machinery - Hay</b>			
Total Investment (\$/acre)			\$345.83
Residual Value (End of Useful Life)			25%
Useful Life (years)			15
Owned Equipment Equity			55%
Equipment Financed (\$156 per acre)			45%
Machinery Opportunity Cost (Investment Rate)			1.50%
<b>Machinery Cost - Hay (\$/acre)</b>			
Finance Rate & Term	4.500%	7 Years	
Principle & Interest Cost	\$26.41		
Machinery Depreciation Cost	\$17.29		
Owned Machinery Opportunity Cost	\$2.85		
<b>Total Cost</b>	<b>\$46.55</b>		
<b>Machinery Lease cost (\$/acre)</b>	<b>\$2.40</b>		
<b>Total Land &amp; Machinery Debt (\$/acre)</b>	<b>\$516</b>		
<b>Machinery - Baled Silage</b>			
Total Investment (\$/acre)			\$133.33
Residual Value (End of Useful Life)			20%
Useful Life (years)			15
Owned Equipment Equity			55%
Equipment Financed (\$60 per acre)			45%
Silage Storage Opp. Cost (Investment Rate)			1.50%
<b>Machinery Cost - Baled Silage (\$/acre)</b>			
Finance Rate & Term	4.500%	7 Years	
Principle & Interest Cost	\$10.18		
Machinery Depreciation Cost	\$7.11		
Owned Machinery Opportunity Cost	\$1.10		
<b>Total Cost</b>	<b>\$18.39</b>		

Hay Equipment Inventory and Current Values							
	Market Value	Forage Usage %	Forage Allocation		Market Value	Forage Usage %	Forage Allocation
<b>Power &amp; Misc Equipment</b>				<b>Harvest Equipment</b>			
MFD Tractor 100HP	\$128,000	50%	\$64,000	Mower/Conditioner	\$40,000	100%	\$40,000
2WD Tractor 60HP	\$40,000	50%	\$20,000	Hay Rake	\$15,000	100%	\$15,000
	\$0	0%	\$0	Baler	\$55,000	100%	\$55,000
	\$0	0%	\$0		\$0	0%	\$0
	\$0	0%	\$0		\$0	0%	\$0
	\$0	0%	\$0		\$0	0%	\$0
	\$0	0%	\$0		\$0	0%	\$0
	\$0	0%	\$0		\$0	0%	\$0
<b>Total</b>			<b>\$84,000</b>	<b>Total</b>			<b>\$110,000</b>

	Market Value	Forage Usage %	Forage Allocation		Market Value	Forage Usage %	Forage Allocation
<b>Seeding, Tillage, Spraying</b>				<b>Trucks &amp; Trailers</b>			
Cultivator	\$10,000	20%	\$2,000	enter equipment here	\$0	0%	\$0
Harrow 50ft	\$10,000	20%	\$2,000		\$0	0%	\$0
Air tank	\$10,000	20%	\$2,000		\$0	0%	\$0
Air drill 40ft	\$30,000	20%	\$6,000		\$0	0%	\$0
PT sprayer	\$7,500	20%	\$1,500		\$0	0%	\$0
	\$0	0%	\$0		\$0	0%	\$0
	\$0	0%	\$0		\$0	0%	\$0
	\$0	0%	\$0		\$0	0%	\$0
<b>Total</b>	<b>\$67,500</b>		<b>\$13,500</b>	<b>Total</b>			<b>\$0</b>
<b>Owned Equipment TOTAL</b>		<b>\$207,500</b>					

Baled Silage Equipment Inventory and Current Values							
	Market Value	Forage Usage %	Forage Allocation		Market Value	Forage Usage %	Forage Allocation
<b>Miscellaneous Equipment</b>				<b>Harvest Equipment</b>			
enter equipment here	\$0	0%	\$0	Silage Bale Wrapper	\$40,000	100%	\$40,000
	\$0	0%	\$0		\$0	0%	\$0
	\$0	0%	\$0		\$0	0%	\$0
	\$0	0%	\$0		\$0	0%	\$0
<b>Total</b>			<b>\$0</b>	<b>Total</b>			<b>\$40,000</b>
<b>Silage Equipment TOTAL</b>		<b>\$40,000</b>					

Leased Equipment Inventory							
	Annual Lease	Forage Usage %	Forage Allocation		Annual Lease	Forage Usage %	Forage Allocation
<b>Seeding, Tillage, Spraying</b>				<b>Trucks &amp; Trailers</b>			
enter equipment here	\$0	0%	\$0	3/4 ton pickup	\$9,600	15%	\$1,440
	\$0	0%	\$0		\$0	0%	\$0
	\$0	0%	\$0		\$0	0%	\$0
	\$0	0%	\$0		\$0	0%	\$0
	\$0	0%	\$0		\$0	0%	\$0
<b>Total</b>	<b>\$0</b>		<b>\$0</b>	<b>Total</b>			<b>\$1,440</b>
<b>Leased Equipment TOTAL</b>		<b>\$1,440</b>	<b>\$2.40 per acre</b>				

\* Leased equipment costs are listed under Operating Costs on the Summary Page.

## Other Assumptions

### **Fuel Costs:**

Includes fuel used for field work, and trucking in inputs.

### **Machinery Operating Costs:**

Includes costs for maintenance, repairs, licenses and insurance.

### **Crop Insurance: (2021 rates)**

Forage Region 6 - Establishment Insurance at \$80/ac coverage and annual Select Hay insurance at 80% coverage. Risk Area 14 - Greenfeed Insurance at 80% coverage.

### **Other Costs:**

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

### **Bale Moisture:**

Bale moisture based on: 12.1% alfalfa hay; 12.6% alfalfa-grass hay; 14.2% greenfeed hay; 50% alfalfa baled silage; 50% alfalfa-grass baled silage and 50% greenfeed baled silage.

### **Land Taxes:**

The average for the province was based on land tax assessment and mill rates of a sample of municipalities growing crops 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 land values. Budget assumed 15% financed at 4% for 25 years, plus 1.5% land equity opportunity cost. Budget can be used to estimate cashflow by removing investment cost.

P&I Cost (based on \$180,000 Mortgage) = \$11,522 payments per year / 600 acres = \$19.20/acre)

Investment = (Total Investment x Owned Equity %) x Investment Rate % (eg. ((\$2,000 x 85%) x 1.5%) = \$25.50/acre)

### **Machinery Cost:**

Based on approximate average machinery values. Budget assumed 45% financed at 4.5% for 7 years, depreciation costs over 15 years with a 25% residual value, plus 1.5% machinery equity opportunity cost. Budget can be used to estimate cashflow by removing depreciation and investment cost.

P&I Cost (based on \$93,375 + \$18,000 Loan) = \$15,846 + \$3,055 payment per year / 600 + 300 acres = \$26.41 + \$10.18/acre)

Depreciation (Usage Cost) = (Total Investment - Residual Value) / Years Useful Life (eg. (\$345.83 - (\$345.83 x 25%)) / 15 = \$17.29/acre)

Investment = (Total Investment x Owned Equity %) x Investment Rate % (eg. (\$345.83 x 55%) x 1.5%) = \$2.85/acre)

### **Estimated Farmgate Values:**

Forage prices are based on estimated prices for fall/winter 2020/21.

### **Storage Cost:**

Dry hay storage costs are estimated at \$0.00 per acre.

### **Profitability & Breakeven Analysis:**

Gross Revenue = Price per unit x Yield per acre (eg. alfalfa: \$120.00/ton x 3.5 ton/ac = \$420.00/ac)

Net Profit = Gross Revenue - Total Cost

(eg. alfalfa: \$420.00 gross revenue - \$310.61 total cost = \$109.39 per acre)

Operating Expense Ratio = (Operating Cost / Gross Revenue) x 100

(eg. alfalfa: \$190.55 operating expense / \$420.00 gross revenue = 45.4%)

Breakeven Price = Cost / Target Yield (eg. alfalfa cost \$310.61 / 3.5 ton = \$88.75 per ton)

Breakeven Yield = Cost / Price per Unit (eg. alfalfa cost \$310.61 / \$120.00 ton = 2.59 ton)

Created and maintained by [Manitoba Farm Management](#)

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