

# Dairy Cost Study

The Economics of  
Milk Production  
in Alberta  
2016



**DAIRY COST STUDY:  
THE ECONOMICS OF MILK PRODUCTION  
IN ALBERTA  
2016**

**Volume 76**

**by**

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## Introduction

The Dairy Cost Study is a valuable benchmark of cost and return information for individual dairy producers in Alberta. Participants in the study receive a detailed analysis of their farming operation which can be directly compared to the provincial profiles (e.g. average, top-third, bottom-third). Other dairy producers in the province can compare their own records and analysis with the provincial profiles. The Dairy Cost Study also provides vital information to other dairy industry participants, such as financial institutions, market analysts and policy analysts.

The Dairy Cost Study was introduced during World War II. Since then, the Economics Section has added cost and return assessments for a wide range of crop and livestock production in Alberta.

In summary, the objectives of the study are as follows:

- to provide an annual account of the costs and returns of milk production in Alberta;
- to provide the participating dairy farmers with a personal business analysis for use in making management decisions;
- to provide a benchmark for the evaluation of milk pricing; and
- to provide economic information for farm management, extension education, and service providers.

## The Dairy Cost Study

The Dairy Cost Study is an economic analysis of the costs and returns of a sample of Alberta dairy producers for a given production year. Study participants are required to complete monthly survey forms regarding their dairy production activities - dairy herd inventory, capital purchases, milk sales and farm use, feed use and purchase costs, labour costs, and other expenses related to the dairy enterprise - and an annual form on their dairy investments. (The survey forms are shown in Appendix F.) From this database, weighted sample averages are calculated which represent benchmarks for all dairy producers in the province. As well, study participants receive a confidential report on their dairy operation which can be compared with these provincial benchmarks.

Milk production in Canada is directed towards two categories, fluid milk and industrial milk, which comprises milk used for all dairy products such as cheese and yogurt. In 2016, approximately 43 percent of Alberta's total milk production was for fluid milk. In the past, dairy producers had separate quota allocations for fluid and industrial milk production. However, in August 2008, Alberta moved to a total production quota (TPQ) system and no distinction is made between fluid and industrial milk production at the farm level. The cost profiles in this report therefore represent all milk production in Alberta. Also, in August 2009, it became mandatory for Alberta milk producers to participate on the Canadian Quality Milk Program.

## The Survey Group

Forty-five dairy producers across the province submitted monthly business information for the 2016 calendar year. Two regional sub-groups were also identified for Northern Alberta (north of Ponoka) and Southern Alberta. Northern Alberta was represented by 15 producers while Southern Alberta had 30 participants complete the study.

The study was designed to represent a cross section of dairy farms by the size of their milk quota. Efforts were made to select study participants by systematic random sampling to provide better representation of the total population. Some characteristics of the sample are shown in Table 1. Appendix E presents charts showing individual results for the 45 dairy cost study participants.

**Table 1**  
**2016 Sample Characteristics**

Years in Dairy	Total Sample %	Indebtedness		Herd Size (# of cows)	
		<30%	≥30%	<75	≥75
<10	7	0	3	1	2
≥10	93	29	13	3	39
<b>Total (%)</b>	<b>100</b>	<b>64</b>	<b>36</b>	<b>9</b>	<b>91</b>

## Study Methodology

1. **Enterprise identification:** There are several different approaches for calculating the farm cost of producing fluid milk. Some studies use the total farm approach, which combines the dairy costs with those of other enterprises. This Alberta study examines only the dairy enterprise, which is defined as all activities associated with both milking cows and maintaining dry cows and young dairy stock. In most cases, the dairy operator uses home-grown feed in association with purchased feed. The costs of production of the homegrown feed are allocated to the crop enterprise portion of the farm, and are not considered in the dairy enterprise. Consequently, the final costs outlined in this report are only those associated with milk production.
  
2. **Inventory adjustment:** Since the cost of raising young dairy stock is included in the cost of milk production, the total income includes net cattle sales and net inventory changes. Cattle inventory changes, or herd growth, are determined by subtracting the beginning-year inventory value from the year-end inventory value. Gross income is thus composed of milk sales, net cattle sales, and the value of this net inventory adjustment. The net inventory adjustment may be negative or positive.
  
3. **Home grown feed:** Hay that is grown on the farm and fed to dairy livestock is priced at the regional market value of stacked hay on the farm. Similarly, feed grain is valued at regional elevator prices provided by the Statistics and Data Development Section at Alberta Agriculture and Forestry. In other words, the dairy enterprise is charged the current market value for these home-grown inputs, just as if they were purchased from the cropping enterprise. The total value of home-grown feed is determined by multiplying the regional value or price by the actual

quantity fed. This procedure adequately compensates for the production cost of home-grown feed. Alternatively, where feed is purchased, the actual purchase cost is used in the analysis.

4. **Value of investment and depreciation:** The information presented in this report is intended to reflect the average yearly production conditions in the dairy industry. Depreciation estimates are based on the original value of buildings and machinery. Current market value of owned assets is also estimated by updating the original value of the dairy investment with appropriate inflation factors, and then depreciating each item accordingly, based on the number of years in use. Original values and years in use are obtained from participants' farm records. With the exception of acreage for pasture, house, dairy buildings and corral location, farmland is not considered to be a dairy investment. The dairy livestock inventory is valued using the average annual market price. Value of investment is used for calculating the return to equity, and for determining the equity position of the dairy operation.
  
5. **Operator and family labour:** The operator's actual labour may vary from almost none on some dairy farms to the total input of labour on other farms. The procedure used in this study to put a value to operator labour is to multiply the operator's labour hours times the average hourly wage rate paid for dairy labour reported by the participants on the study. (All type of paid labour is included in this category from strictly feeding, to all general chores, to relief milking.) Assigning a value to operator labour is preferred over leaving it as unpaid labour because of the great variability in labour time between operators. Family labour is evaluated similar to the above, but a lower wage rate is applied to family members under the age of 16. Partners, spouses and other family members (16 years of age or older) receive the same wage rate as the operator.
  
6. **Interest on capital:** The actual interest paid on existing liabilities is included in the capital cost. To obtain this value, participating producers were asked to report their outstanding liabilities (excluding quota) and the interest rates charged. This method is more accurate than reporting the total annual interest paid. When both the total variable cost and the capital cost for the dairy enterprise are subtracted from gross income, the bottom line residual is the return to equity and management. When this residual is expressed as a percentage of the equity capital, then the percent return to equity can be compared with the returns from alternative investment

opportunities such as Canada Savings Bonds or term deposits.

7. **Rent:** Rent charges are included in the cost of capital. The capital cost in this context represents the cost of ownership of resources. If resources are rented, there is a charge for their use. If, on the other hand, resources are owned, the owner must bear the cost of depreciation and interest on debt.

## Dairy Enterprise Economic Overview

Tables 2 through 4 provide a summary of the costs and returns for dairy producers in Alberta. (More detailed results are presented in Appendices A, B, and C.) In Table 2, the average results for the entire survey sample are listed in the centre column. Costs and returns are provided for two sub-groups of dairy producers based on their total production costs. The bottom 1/3 are the highest cost producers and the top 1/3 the lowest cost producers. The total cost for the top 1/3 group was 29 percent or \$27.19 per hL lower than the bottom 1/3, and 14 percent lower than the provincial average. The 43 percent difference in labour cost between the top third and bottom third is the largest contributor to this difference. This would indicate that giving attention to labour efficiencies can lower your costs. Variable costs varied 31 percent between top and bottom third. This is a category that can be highly controlled by the farmer. It includes items such as vet and medicine, utilities, repairs, just to name a few.

Table 3 compares the average costs and returns for 2015 and 2016. In 2016 the total cost of producing a hectolitre of milk was \$78.71. This is less than a one percent increase from the previous year. The slight shift in costs came from a decrease in total feed costs that was matched closely to an increase in capital costs, which was mainly depreciation. Value of depreciation increased due to a 10 percent rise in investment per cow in 2016, mostly by way of new buildings and improvements to facilities.

Demand for milk remains at a high and producers have met this demand with little increase in cost. There was only a slight decrease in milk price. The average butterfat test was 4.07 kg/hL, however there was a drop in both protein and lactose other solids and their respective component prices.

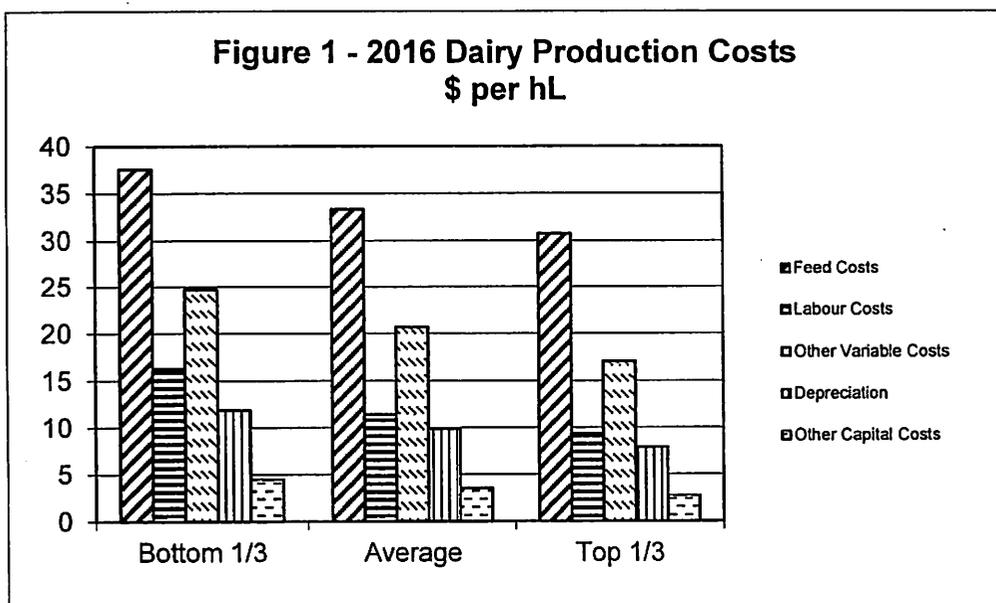
Finally, Table 4 compares average costs and returns for Northern and Southern Alberta.

Table 2

Dairy Enterprise Costs and Returns - \$ Per hL Sold

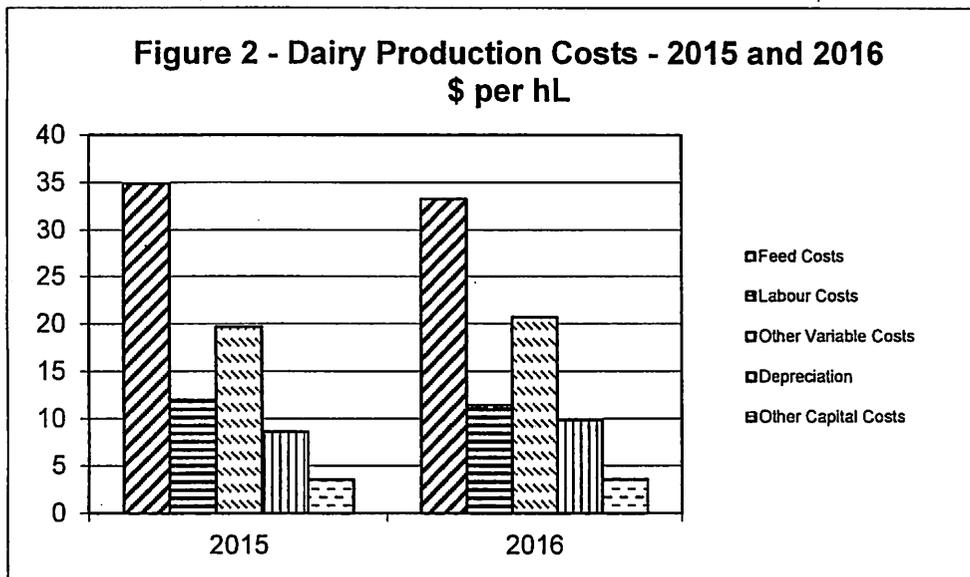
Bottom 1/3 (Highest Cost Producers), Average Cost, Top 1/3 (Lowest Cost Producers)

	Bottom 1/3	Average	Top 1/3
Milk Sales	80.26	79.13	79.11
<b>Gross Income</b>	<b>86.48</b>	<b>85.45</b>	<b>84.58</b>
Feed Cost	37.58	33.32	30.74
Main Feed Components:			
Grain	5.24	5.02	4.46
Complete Feed	10.16	10.43	7.59
Roughage	15.68	12.96	13.13
Labour Costs	16.28	11.41	9.36
Other Variable Costs	24.74	20.68	17.07
Depreciation	11.87	9.86	7.89
Other Capital Costs	4.46	3.53	2.68
<b>Total Production Costs</b>	<b>94.93</b>	<b>78.81</b>	<b>67.74</b>
<hr/>			
Total Cash Costs	70.64	60.93	52.64
<hr/>			
<b>Gross Margin</b>	<b>15.84</b>	<b>24.51</b>	<b>31.93</b>
<b>Contribution Margin</b>	<b>7.88</b>	<b>20.03</b>	<b>27.41</b>
<b>Return to Investment</b>	<b>(6.25)</b>	<b>8.44</b>	<b>17.74</b>
<b>Return to Equity</b>	<b>(8.45)</b>	<b>6.64</b>	<b>16.84</b>
<hr/>			
<b>Return to Investment (%)</b>	<b>(1.5)</b>	<b>4.6</b>	<b>11.9</b>
<b>Return to Equity (%)</b>	<b>(4.9)</b>	<b>5.1</b>	<b>14.7</b>



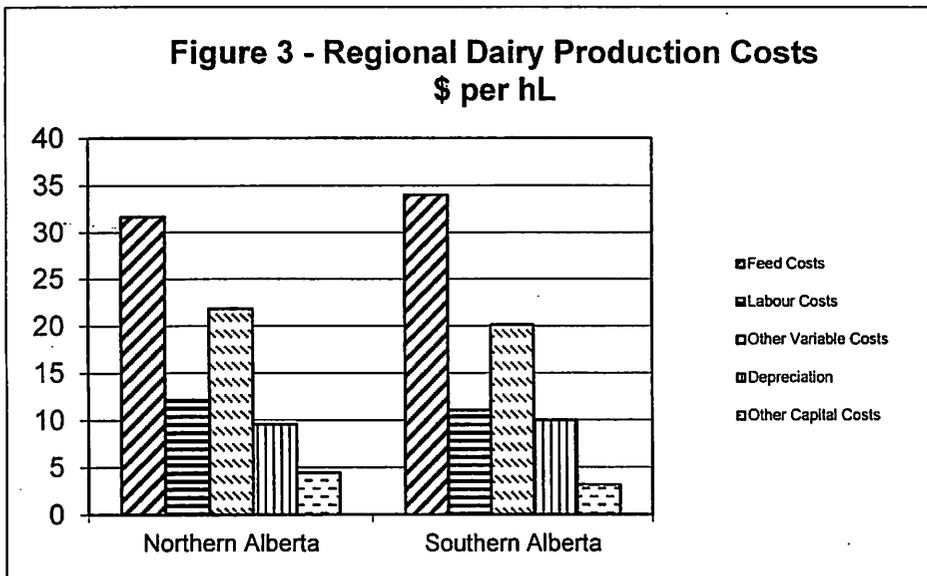
**Table 3**  
**Dairy Enterprise Costs and Returns - \$ Per hL Sold**  
**2015 and 2016**

	2015 (49 producers)	2016 (45 producers)
Milk Sales	80.36	79.13
<b>Gross Income</b>	<b>89.11</b>	<b>85.45</b>
Feed Costs	34.88	33.32
Main Feed Components:		
Grain	4.45	5.02
Complete Feed	10.91	10.43
Roughage	13.93	12.96
Labour Costs	11.99	11.41
Other Variable Costs	19.70	20.68
Depreciation	8.63	9.86
Other Capital Costs	3.52	3.53
<b>Total Production Costs</b>	<b>78.72</b>	<b>78.81</b>
<b>Total Cash Costs</b>	<b>61.32</b>	<b>60.93</b>
<b>Gross Margin</b>	<b>27.80</b>	<b>24.51</b>
<b>Contribution Margin</b>	<b>22.55</b>	<b>20.03</b>
<b>Return to Investment</b>	<b>11.97</b>	<b>8.44</b>
<b>Return to Equity</b>	<b>10.39</b>	<b>6.64</b>
<b>Return to Investment (%)</b>	<b>7.2</b>	<b>4.6</b>
<b>Return to Equity (%)</b>	<b>8.3</b>	<b>5.1</b>



**Table 4**  
**Average Dairy Enterprise Costs and Returns - \$ Per hL Sold**  
**Northern and Southern Alberta**

	Northern Alberta (15 Producers)	Southern Alberta (30 Producers)
Milk Sales	79.59	78.93
<b>Gross Income</b>	<b>88.40</b>	<b>84.14</b>
Feed Costs	31.74	34.02
Main Feed Components:		
Grain	5.38	4.86
Complete Feed	8.89	11.11
Roughage	12.47	13.17
Labour Cost	12.16	11.08
Other Variable Costs	21.85	20.16
Depreciation	9.59	9.99
Other Capital Costs	4.43	3.13
<b>Total Production Costs</b>	<b>79.77</b>	<b>78.38</b>
<b>Total Cash Costs</b>	<b>62.70</b>	<b>60.15</b>
<b>Gross Margin</b>	<b>25.69</b>	<b>23.99</b>
<b>Contribution Margin</b>	<b>22.64</b>	<b>18.88</b>
<b>Return to Investment</b>	<b>10.91</b>	<b>7.36</b>
<b>Return to Equity</b>	<b>8.62</b>	<b>5.77</b>
<b>Return to Investment (%)</b>	<b>6.0</b>	<b>4.0</b>
<b>Return to Equity (%)</b>	<b>7.5</b>	<b>4.2</b>



## Definitions for the Dairy Cost Study

Net Cattle Sales - revenues associated with the purchase and sale of dairy livestock (milking / dry cows, replacement heifers, bulls and young stock).

Gross Income - the value of what was produced by the dairy enterprise over the course of the production year. Includes cash and non-cash values of:

- ◆ milk sales,
- ◆ revenues from miscellaneous sources eg. colostrum sales, BSE test cow payments, environmental compliance and a milk quality bonus (if applicable),
- ◆ inventory adjustments relating to changes in the number & value of stock included in the enterprise, and
- ◆ net cattle sales.

Feed Costs - the cost of all feed used by the dairy enterprise, purchased or homegrown. (Homegrown feed is valued on the market value of the feed, **not** the cost of growing the feed.)

Complete Feed - includes all feed values given under dairy ration, calf feed and milk replacer.

Labour Costs - the sum of paid and contributed labour, as allocated to the dairy enterprise. Paid labour is valued at cost, while unpaid labour is valued at a standard or base cost per hour.

Other Variable Costs - total variable costs (such as bedding and supplies, veterinary and medicine, utilities, fuel, repairs) less feed and labour costs.

Depreciation - sum of depreciation and machinery/equipment/building lease payments on assets allocated to the dairy enterprise.

Other Capital Costs - total cash overheads, as allocated to the dairy enterprise (rent, property taxes, insurances, licences and term loan interest).

Total Cash Costs - total production costs less depreciation and family labour.

Total Production Costs - sum of all variable and capital production costs.

Contribution Margin - gross income less variable costs.

Gross Margin - gross income less total cash costs.

Return to Equity (\$) - gross income less total production costs.

Investment - sum of assets allocated to the enterprise. Includes: dairy livestock, machinery, equipment, buildings/facilities and building site.

Return to Investment (\$) - gross income less total production costs plus capital interest.

Debt/Capital Ratio - measures the extent of external financing on dairy farms and is calculated as the farm's debt divided by its total capital.

Median - the value of the middle item of a data set that has been arranged in an increasing order (lowest to highest).

Total Production Quota (TPQ) - single quota system (effective August, 2008).

Dry Matter Equivalent - conversion to dry matter from silage at 60% moisture and haylage at 56% moisture.

## Production Factor Analysis

This section provides a detailed analysis of the survey group based on six specific production factors:

- herd size
- milk production
- gross income
- total cost
- investment
- labour

For each analysis, the survey group was sorted into three separate classes (bottom 1/3, middle 1/3, top 1/3) based on the production factor being evaluated. For instance, on the next page the survey group was divided into three sub-groups based on herd size. The bottom 1/3 group consists of the smallest dairy enterprises while the top 1/3 group consists of the largest producers. Production and management results are shown for each sub-group in the accompanying table and figures.

## Dairy Characteristics by Herd Size Class

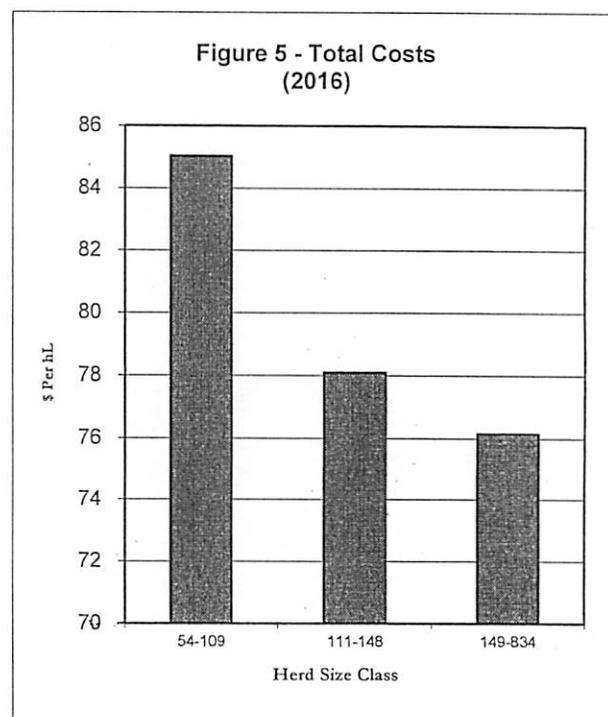
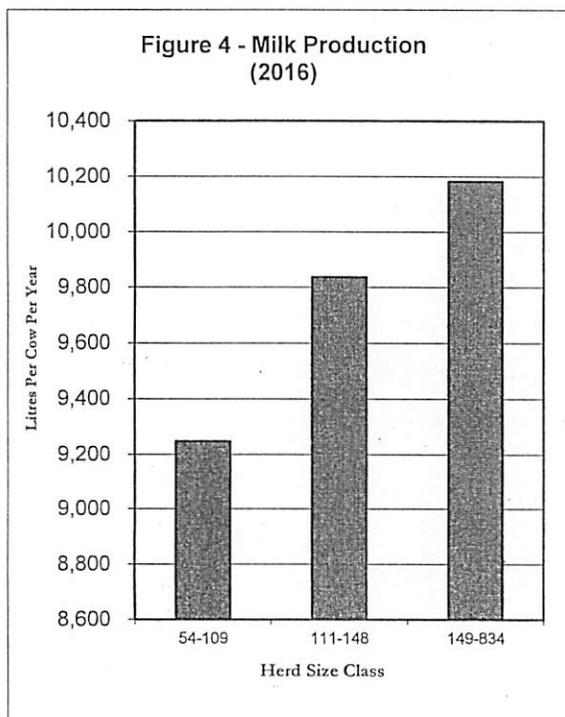
**Table 5 - Dairy Enterprise Characteristics by Herd Size Class**

Herd Size ranged from 54 to 834 milking cows. For this analysis, the sample group was split into the following three size classes:

Bottom 1/3      54 - 109  
 Middle 1/3     111 - 148  
 Top 1/3        149 - 834

	Bottom 1/3 54-109	Middle 1/3 111-148	Top 1/3 149-834
Years in Dairy	26.43	23.67	29.07
<b>Milk Production (litres/yr)</b>	<b>9,247.80</b>	<b>9,836.96</b>	<b>10,182.69</b>
Home Grown Feed (%)	77.6	66.3	69.6
Butterfat Test (kg/hL)	4.07	4.13	4.02
Gross Income (\$/hL)	84.22	85.27	85.48
<b>Total Costs (\$/hL)</b>	<b>85.03</b>	<b>78.10</b>	<b>76.15</b>
Feed Costs (\$/hL)	33.89	33.64	32.73
Labour (hrs/cow)	69.06	57.35	44.56
Investment (\$/cow)	15,827.42	16,886.43	18,007.07
Return to Equity (%)	5.4	2.3	11.1
Return to Investment (%)	2.3	4.5	7.3
Debt/Capital Ratio	0.23	0.20	0.30

Figures 4 and 5 illustrate Milk Production and Total Costs results for the bottom, middle and top 1/3 groups (sorted by Herd Size Class).



## Dairy Characteristics by Milk Production Class

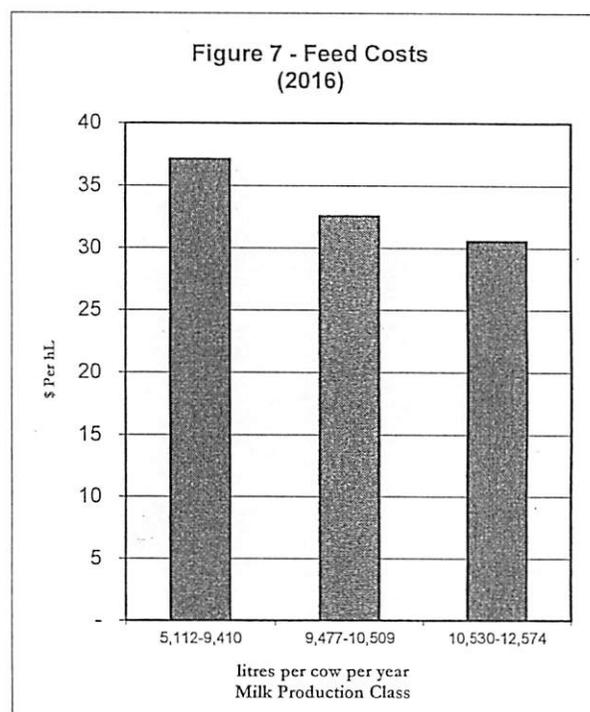
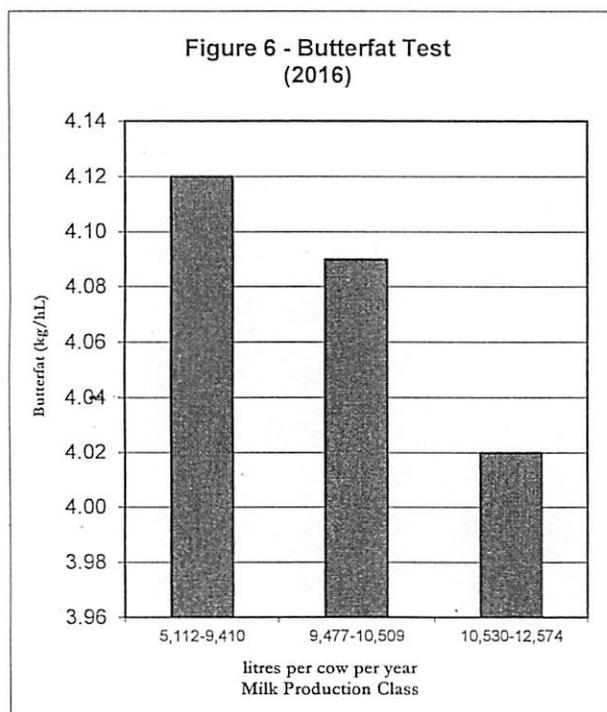
Table 6 - Dairy Enterprise by Milk Production Class

Milk Production ranged between 5,112 and 12,574 litres per cow per year. For this analysis, the sample group was split into the following three classes:

Bottom 1/3    5,112 - 9,410  
 Middle 1/3    9,477 - 10,509  
 Top 1/3       10,530 - 12,574

	Bottom 1/3 5,112-9,410	Middle 1/3 9,477-10,509	Top 1/3 10,530-12,574
Years in Dairy	27.80	23.60	27.77
Herd Size	187	144	152
Home Grown Feed (%)	82.5	51.7	79.4
<b>Butterfat Test (kg/hL)</b>	<b>4.12</b>	<b>4.09</b>	<b>4.02</b>
Gross Income (\$/hL)	85.80	84.74	84.43
Total Costs (\$/hL)	91.20	76.98	71.11
<b>Feed Costs (\$/hL)</b>	<b>37.11</b>	<b>32.58</b>	<b>30.56</b>
Labour (hrs/cow)	57.12	55.78	58.06
Investment (\$/cow)	16,955.62	16,988.82	16,776.49
Return to Equity (%)	(2.5)	10.0	11.3
Return to Investment (%)	(0.5)	5.1	9.5
Debt/Capital Ratio	0.30	0.30	0.13

Figures 6 and 7 illustrate Butterfat Test and Feed Costs results for the bottom, middle and top 1/3 groups (sorted by Milk Production Class).



# Dairy Characteristics by Gross Income Class

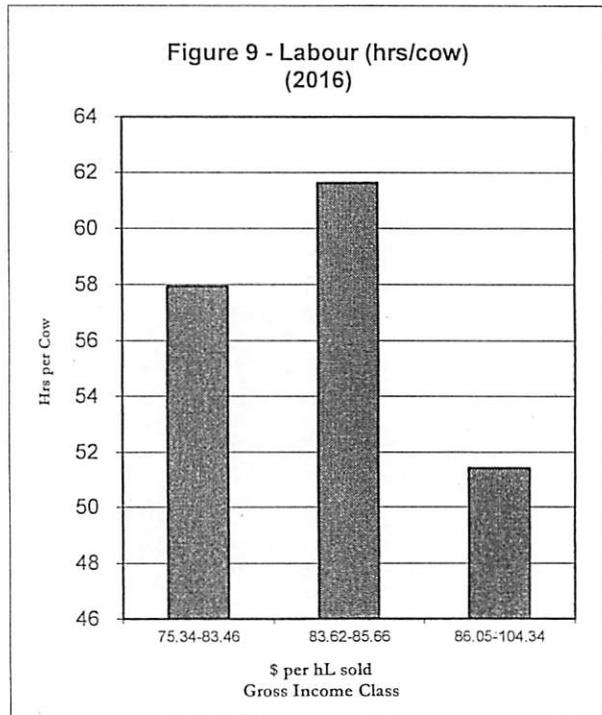
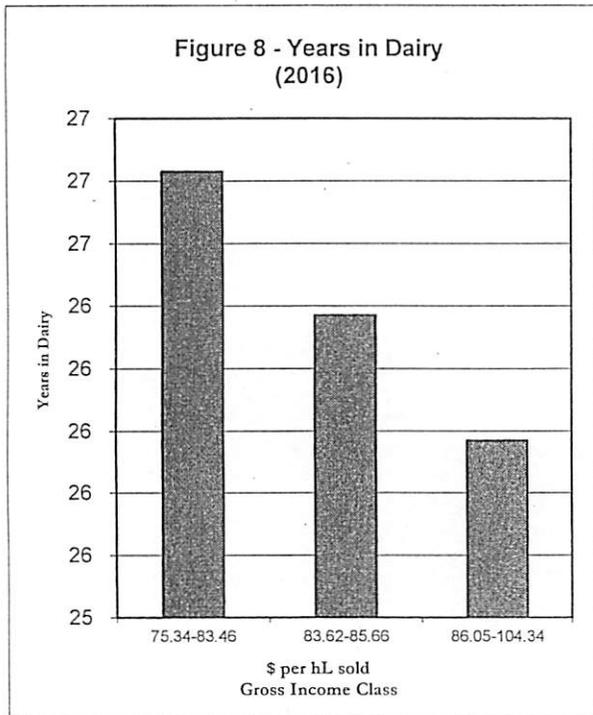
Table 7 - Dairy Enterprise by Gross Income Class

Gross Income ranged between \$75.34 and \$104.34 per hL sold. For this analysis, the sample group was split into the following three classes:

- Bottom 1/3     75.34 - 83.46
- Middle 1/3    83.62 - 85.66
- Top 1/3        86.05 - 104.34

	Bottom 1/3 75.34-83.46	Middle 1/3 83.62-85.66	Top 1/3 86.05-104.34
<b>Years in Dairy</b>	26.83	26.37	25.97
Herd Size	160	125	198
Milk Production (litres/yr)	9,870.22	9,623.27	9,773.96
Home Grown Feed (%)	70.8	77.8	64.9
Butterfat Test (kg/hL)	3.93	4.06	4.24
Total Costs (\$/hL)	81.02	80.55	77.71
Feed Costs(\$/hL)	35.75	31.85	32.65
<b>Labour (hrs/cow)</b>	<b>57.92</b>	<b>61.62</b>	<b>51.42</b>
Investment (\$/cow)	18,403.81	15,435.48	16,881.64
Return to Equity (%)	1.2	7.1	10.5
Return to Investment (%)	1.7	4.9	7.6
Debt/Capital Ratio	0.19	0.30	0.24

Figures 8 and 9 illustrate Years in Dairy and Labour results for the bottom, middle and top 1/3 groups (sorted by Gross Income Class).



## Dairy Characteristics by Total Cost Class

Table 8 - Dairy Enterprise by Total Cost Class

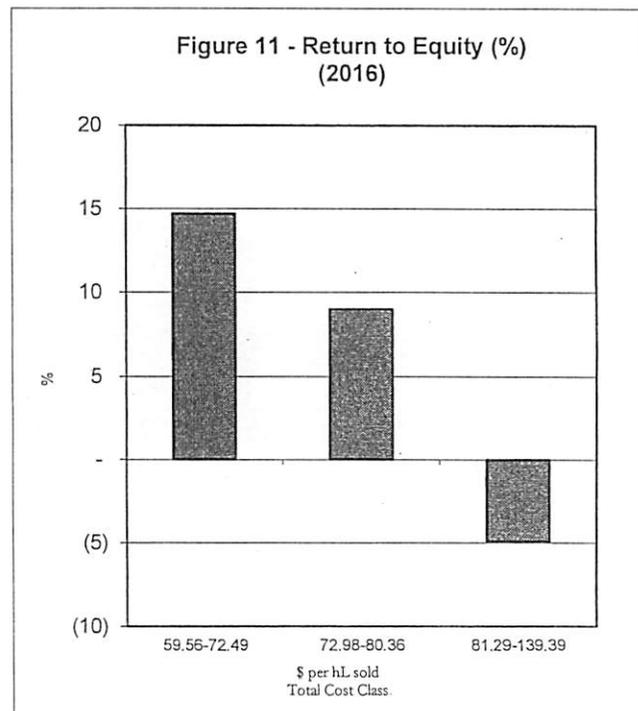
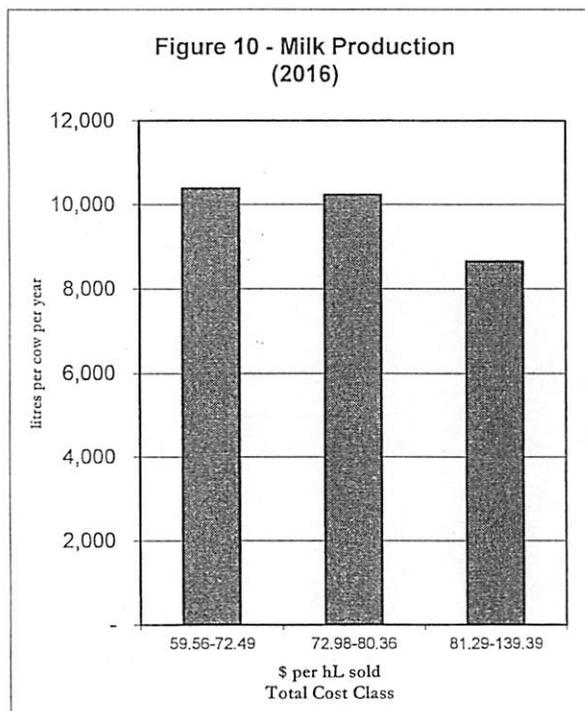
Total Cost ranged between \$59.56 and \$139.39 per hL sold. For this analysis, the sample group was split into the following three classes:

Top 1/3            59.56 - 72.49  
 Middle 1/3        72.98 - 80.36  
 Bottom 1/3        81.29 - 139.39

In this situation the top 1/3 are the lower cost producers and the bottom 1/3 are the higher cost producers.

	Top 1/3 59.56-72.49	Middle 1/3 72.98-80.36	Bottom 1/3 81.29-139.39
Years in Dairy	26.50	27.03	25.63
Herd Size	148	148	186
<b>Milk Production (litres/yr)</b>	<b>10,384.78</b>	<b>10,232.22</b>	<b>8,650.45</b>
Home Grown Feed (%)	73.1	68.4	72.1
Butterfat Test (kg/hL)	4.06	4.04	4.13
Gross Income (\$/hL)	84.58	83.91	86.48
Feed Costs (\$/hL)	30.74	31.94	37.58
Labour (hrs/cow)	46.10	63.44	61.43
Investment (\$/cow)	16,217.93	16,040.74	18,462.26
<b>Return to Equity (%)</b>	<b>14.7</b>	<b>9.0</b>	<b>(4.9)</b>
Return to Investment (%)	11.3	5.4	(2.5)
Debt/Capital Ratio	0.17	0.27	0.30

Figures 10 and 11 illustrate Milk Production and Return to Equity results for the top, middle and bottom 1/3 groups (sorted by Total Cost Class).



## Dairy Characteristics by Investment Class

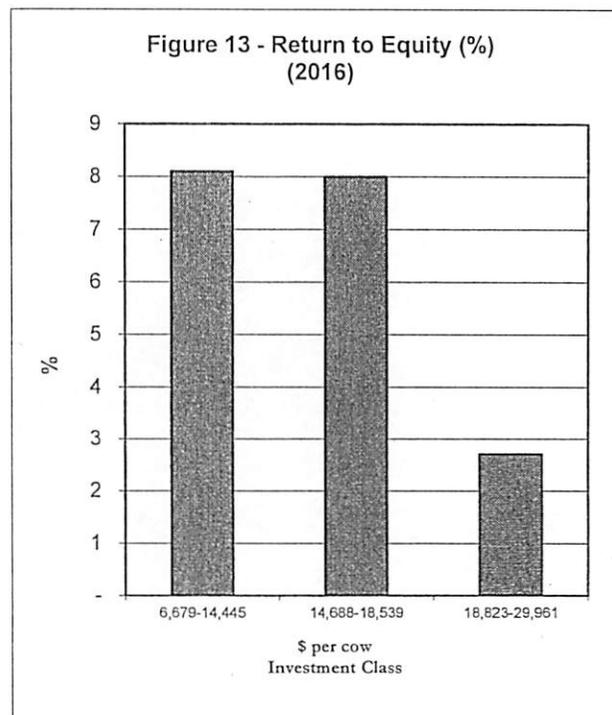
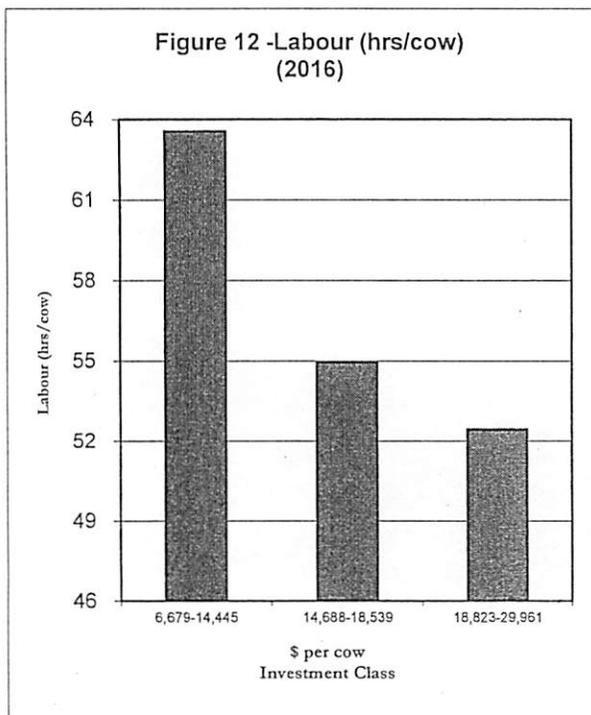
Table 9 - Dairy Enterprise by Investment Class

Investment per cow ranged between \$6,679 and \$29,961. For this analysis, the sample group was split into the following three classes:

Bottom 1/3      6,679 - 14,445  
 Middle 1/3     14,688 - 18,539  
 Top 1/3        18,823 - 29,961

	Bottom 1/3 6,679-14,445	Middle 1/3 14,688-18,539	Top 1/3 18,823-29,961
Years in Dairy	25.27	24.77	29.13
Herd Size	167	146	169
Milk Production (litres/yr)	9,495.32	9,898.48	9,873.65
Home Grown Feed (%)	62.5	77.3	73.7
Butterfat Test (kg/hL)	4.00	4.13	4.09
Gross Income (\$/hL)	85.07	85.82	84.08
Total Costs (\$/hL)	76.59	79.65	83.04
Feed Costs (\$/hL)	32.80	33.53	33.94
<b>Labour (hrs/cow)</b>	<b>63.56</b>	<b>54.95</b>	<b>52.45</b>
<b>Return to Equity (%)</b>	<b>8.1</b>	<b>8.0</b>	<b>2.7</b>
Return to Investment (%)	7.3	5.6	1.2
Debt/Capital Ratio	0.21	0.22	0.31

Figures 12 and 13 illustrate Labour and Return to Equity results for the bottom, middle and top 1/3 groups (sorted by Investment Class).



## Dairy Characteristics by Labour (hrs/cow) Class

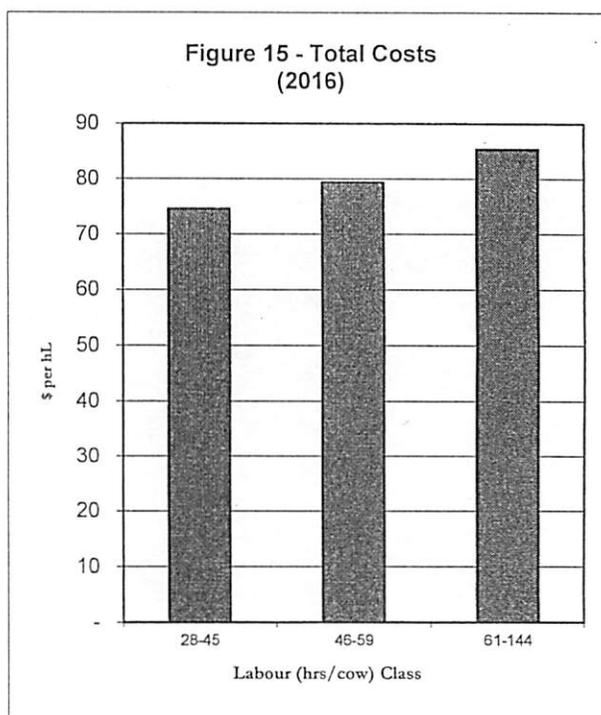
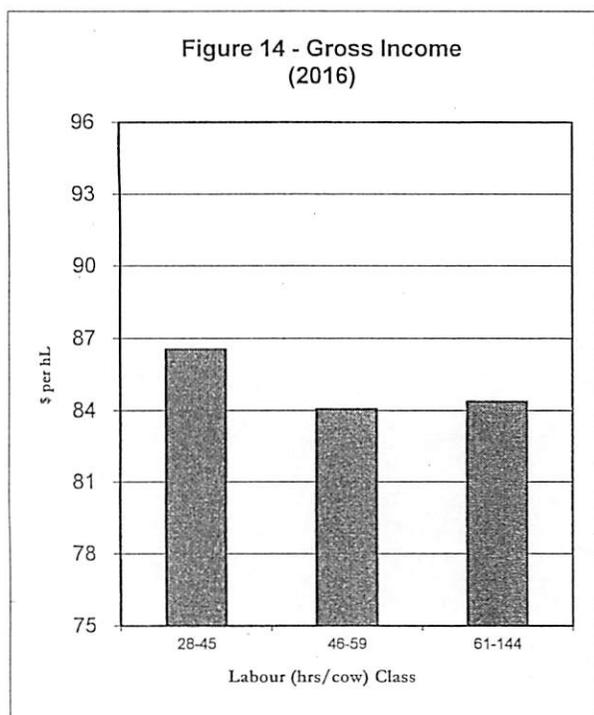
**Table 10 - Dairy Enterprise by Labour (hrs/cow) Class**

Labour (hrs/cow) ranged between 28 and 144. For this analysis, the sample group was split into the following three classes:

Bottom 1/3            28 - 45  
 Middle 1/3            46 - 59  
 Top 1/3                61 - 144

	Bottom 1/3 28-45	Middle 1/3 46-59	Top 1/3 61-144
Years in Dairy	29.93	22.47	26.77
Herd Size	217	158	107
Milk Production (litres/yr)	10,004.29	9,726.38	9,536.77
Home Grown Feed (%)	79.5	66.4	67.6
Butterfat Test (kg/hL)	4.14	4.03	4.06
<b>Gross Income (\$/hL)</b>	<b>86.54</b>	<b>84.06</b>	<b>84.37</b>
<b>Total Costs (\$/hL)</b>	<b>74.55</b>	<b>79.37</b>	<b>85.37</b>
Feed Costs (\$/hL)	33.94	31.42	34.90
Investment (\$/cow)	18,268.81	16,507.50	15,944.61
Return to Equity (%)	11.3	5.1	2.4
Return to Investment (%)	7.2	4.7	2.2
Debt/Capital Ratio	0.29	0.33	0.12

Figures 14 and 15 illustrate Gross Income and Total Costs results for the bottom, middle and top 1/3 groups (sorted by Labour hrs/cow Class).



## Detailed Management Factors, Northern and Southern Alberta

Table 11 provides a further examination of regional differences from a management perspective.

**Table 11**  
**Detailed Management Factors, Northern and Southern Alberta, 2016**

	Northern Alberta	Southern Alberta
Herd Size	167	158
Milk Production (litres/cow/year)	8,493.53	10,064.20
Feed Conversion (litres/kg concentrates)	2.00	2.21
Labour Productivity (litres/hr)	171.74	190.19
Labour Hours/Cow (hrs)	49.46	52.92
Investment/Cow (\$/cow)	15,077.85	18,095.52
Milk Production/\$ Invest (litres/\$)	0.56	0.56
Feed Costs (\$/cow)	2,617.00	3,346.92
Purchased Barley (\$/tonne)	186.89	196.05
Cost of Purchased Hay (\$/tonne)	219.60	195.22
Home Grown Roughage (%)	53.4	70.2
Butterfat Test (kg/hL)	4.13	4.05
Protein (kg/hL)	3.38	3.31
LOS (kg/hL)	5.72	5.73
Total Costs (\$/hL)	79.77	78.38
Contribution Margin (\$/hL)	22.64	18.88
Return to Investment (%)	6.0	4.0
Return to Equity (\$/hL)	8.62	5.77
Return to Equity (%)	7.5	4.2
Debt to Capital Ratio	0.37	0.26

# Historical Economic Trends

Figure 16 - Average Milk Price (\$ per hL)

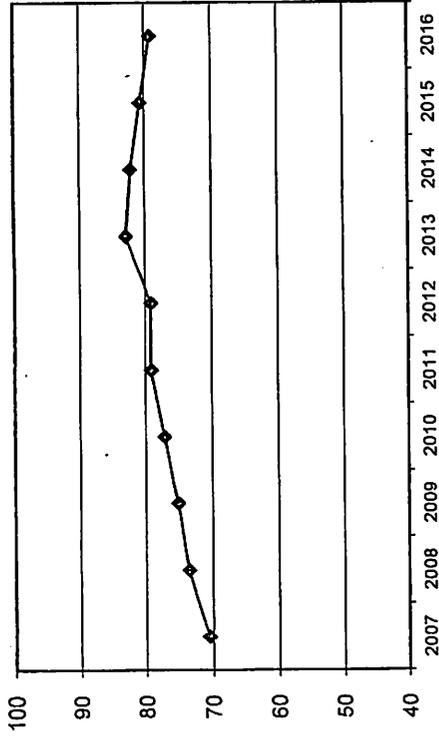


Figure 17 - Feed Cost (\$ per hL)

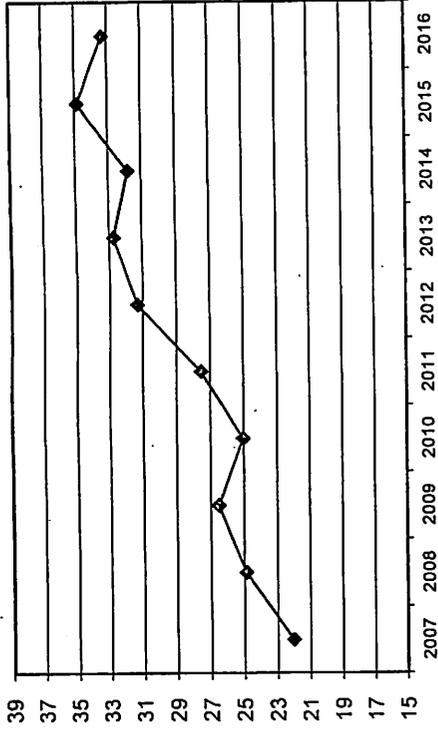


Figure 18 - Total Cost (\$ per hL)

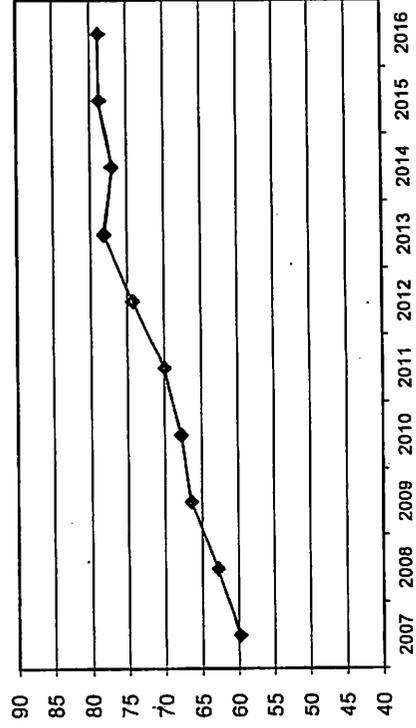


Figure 19 - Return to Equity (%)

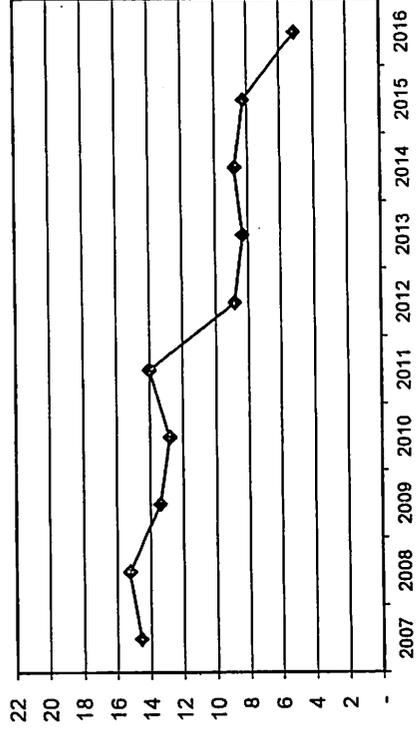


Figure 21 - Milk Production  
(litres/cow per year)

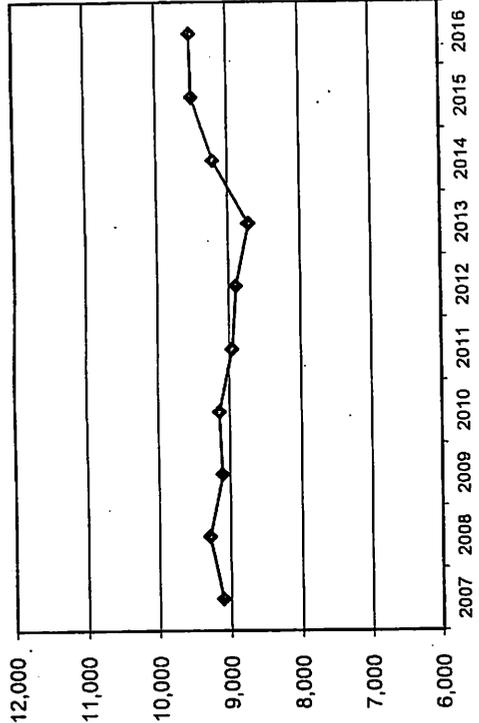


Figure 23 - Cost of Dairy Ration  
(\$ per tonne)

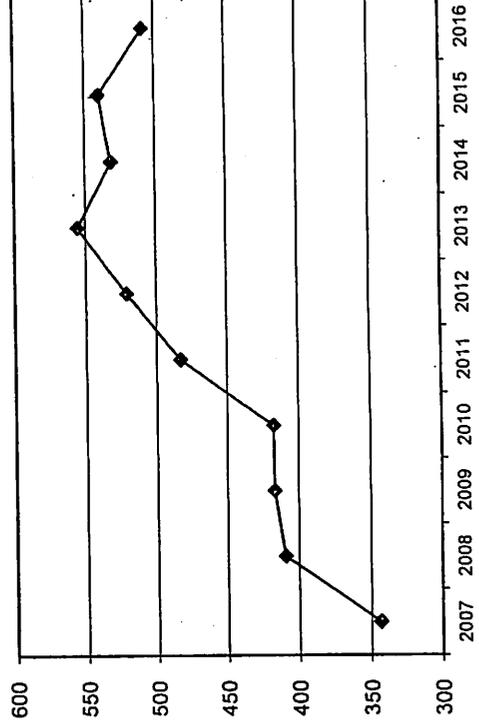


Figure 20 - Median Size of Dairy Herd

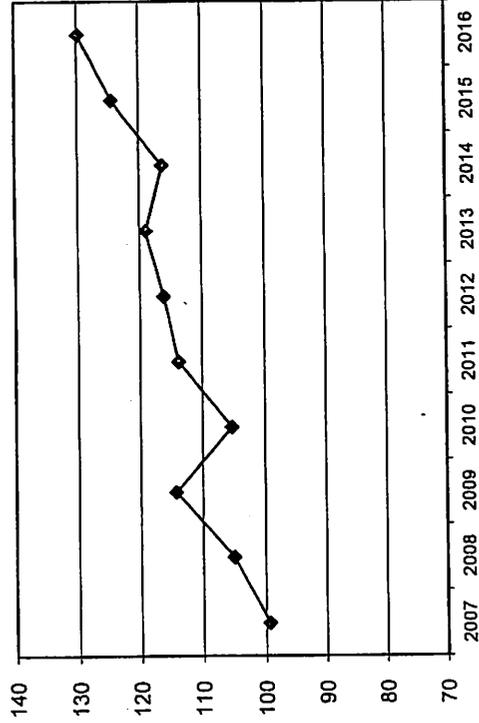
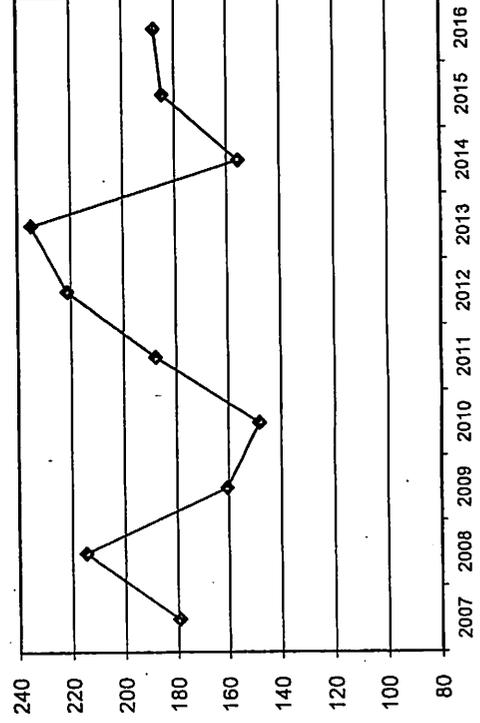


Figure 22 - Purchased Barley Cost  
(\$ per tonne)



## Milk Productivity Factors

A number of management factors related to milk production are reported in Table 3 of Appendix A. They relate the amount of milk produced to three management inputs: feed, labour and capital. While these results reflect the participants in the study group, which changes over time, they are a fair representation of provincial averages.

Figure 24 shows milk productivity per cow over the last decade. Following a period of slow decline between 2008 and 2013, productivity jumped in 2014 and has continued a steady increase, reaching a high point of the last ten years in 2016 at an average of 9,521

litres/cow/year. Beginning in 2014 there was a consumer trend and renewed interest in the consumption of dairy products. The demand

for milk increased. This trend continued through 2015 and 2016 from increased consumer interest, the promotion and use of Canadian milk by large corporations (i.e. Tim Horton's), as well as improved technology used by processors in making cheese. In 2016, dairy farmers were issued a 3.5 percent increase in quota and a total of 18 incentive days to produce milk when demand was at a peak.

The feed conversion rates (or productivity) have varied over time. In previous Dairy Cost Study reports, feed conversion rates appeared to generally improve over the 20-year assessment period, resulting in slightly higher milk production per unit of feed. However, the current feed conversion profile can be interpreted differently; that feed conversion rates have been fairly flat around 2.1 litres per kg of feed concentrates. After a spike in 2009, feed conversion rates have levelled off, possibly due to producers concentrating on relative feed values and less fluctuation in quality or make-up of rations as well as working closely with nutritionist to maintain feeding regimes and feed stability to optimize production. The slight increase in 2016 may be due to addition of voluntary milking systems and cows milking on average more than twice per day.

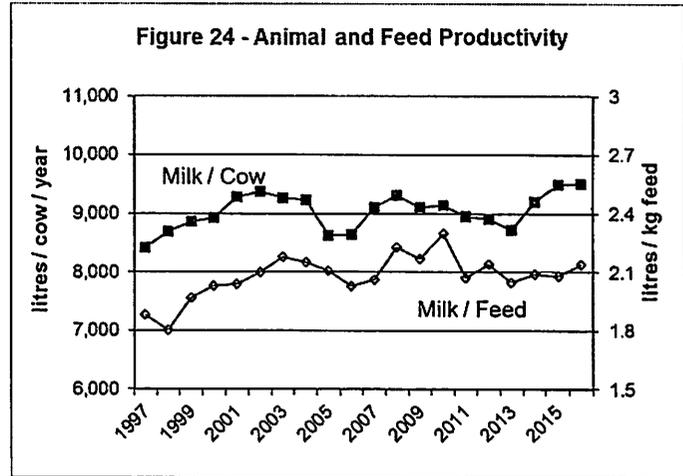
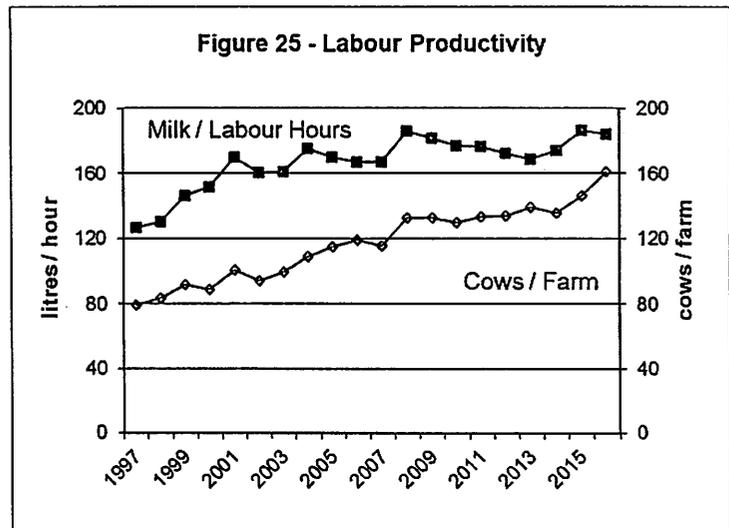


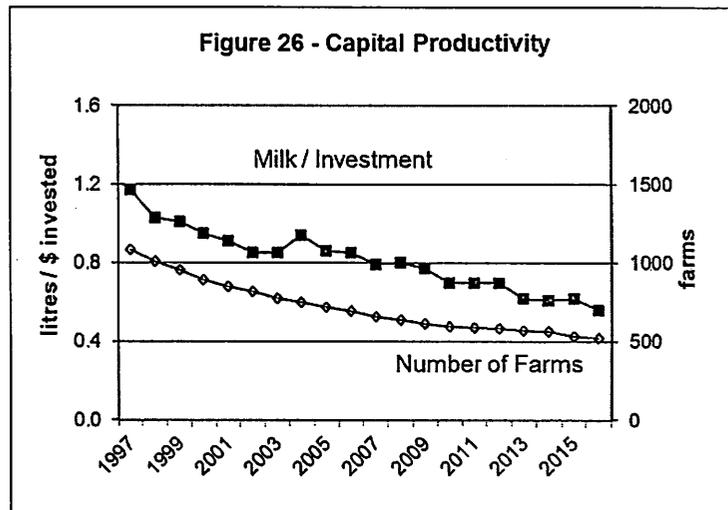
Figure 25 shows the amount of milk produced for each hour of labour on dairy farms. Labour productivity increased dramatically from 2005 to 2007 and then began a downward trend until 2012.

During this 5 year period there was no significant change in herd size. Labour efficiencies may have been affected by the challenge to keep or find farm labourers as the labour force was competing with the

oil and gas industry. Labour efficiency steadily improved since 2013. Herd size has also increased. Labour hours have increased but efficiencies are also evident. When looking at Figure 25, the labour hours in 2008 were close to being the same as in 2016, however the number of cows/farm is much higher. As farm size increased, employees were to manage a larger number of dairy cows.



After an increase in 2003, most probably due to farm purchases/improvements from people outside of Alberta, capital investment slowly declined reaching a fairly flat stretch from 2013 to 2015. In 2016 there has been more capital investment on farm especially in building new barns or renovating to accommodate voluntary milking systems. The number of farms has decreased but the average herd size is larger and milk productivity per cow has increased.



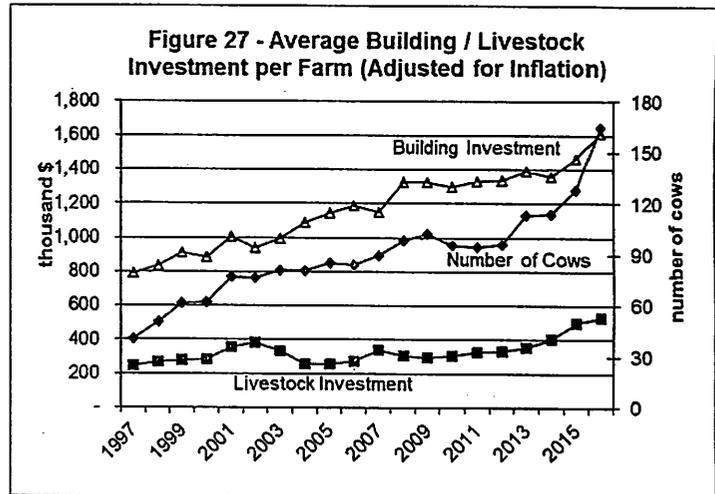
## Capital Investment Trends

### Per Farm

Trends in capital intensity are shown more directly in Figures 27 and 28. The average value of dairy buildings (adjusted for inflation) climbed steadily beginning in 2003 until around 2008 when it

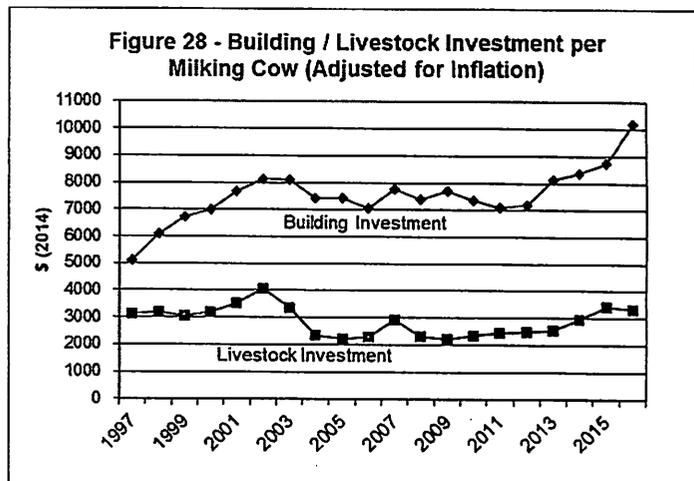
remained relatively flat until 2013 when there seems to be a dramatic change in herd size and re-investment in facilities. As herd sizes continued to grow and the use of voluntary milking systems (robotics) became more popular, there was the trend to build new barns or the need to renovate existing barns.

The total value of livestock per farm (adjusted for inflation) was flat during the mid 1990s. Livestock inventory values grew significantly through 2002. However, they dropped by one-third in the wake of the BSE crisis in 2003 despite an increase in cows per farm. Livestock values began a steady increase in 2013 and have continued to remain strong.



### Per Milking Cow

Figure 28 shows average building and livestock investments per milking cow. It clearly shows how average building values per cow increased dramatically in the early years, remained quite flat between 2003 and 2012. A steady increase began in 2013 with a 28 percent increase between 2015 and 2016.



Following the drop in values after BSE in 2003, livestock values began to rebound in 2007. However, they remained slightly lower than before BSE. A more positive trend began in 2013 with the increase in beef market value which also affected the dairy market values. Investment has dropped slightly in 2016 more due to the retention of milking cows to meet production demands and farmers raising their own replacements rather than the value per head.

## Dairy Enterprise Investment and Debt Levels

Total dairy farm investment (excluding quota) increased by 18 percent at \$2,749,642 per farm in 2016, compared to an average of \$2,255,956 in 2015. On a per cow basis, this works out to \$17,052 (Table 12). Of this total amount, 75 percent was comprised of buildings and equipment investment, 19 percent referred to livestock investment, the remaining 6 percent being invested in land and supplies.

**Table 12**

	2014	2015	2016
	--- \$ Per Cow ---		
Land	952	868	919
Buildings and Equipment	10,681	10,968	12,709
Livestock	3,115	3,473	3,314
Supplies	117	102	110
<b>TOTAL</b>	<b>14,865</b>	<b>15,411</b>	<b>17,052</b>
Debt	3,577	3,838	4,988
Equity	11,288	11,273	12,064
<b>TOTAL</b>	<b>14,865</b>	<b>15,411</b>	<b>17,052</b>

The debt/capital ratio measures the extent of external financing on dairy farms in Alberta. This ratio has increased to 29 percent in 2016, up from low investment years of 2014 and 2015 at 24 and 25 percent respectively. The increase in 2016 was mainly due to investment in buildings. The decrease in livestock investment indicates the trend of farmers raising their own replacement stock and not keeping non-productive cows in the herd.

## Debt Repayment Capacity

The acceptable debt load or repayment capacity of a dairy enterprise can be measured by the contribution margin. Contribution margin is the difference between gross income and variable costs. Therefore, it represents the amount of money available to pay for capital assets - rent, mortgage payments (principle and interest), and taxes. The amount of cash remaining after capital assets payments is the producer's return to owner equity, or profit. A summary of contribution margins for the dairy years 2014, 2015, and 2016 is presented in Table 13.

**Table 13**

<b>Summary of Average Costs and Returns in Alberta</b>				
<b>2014 – 2016</b>				
	2014	2015	2016	2014-2016
	----- \$ Per Cow -----			
<b>A. Gross Income</b>	7889	8212	7934	8012
<b>B. Feed Costs</b>	2847	3214	3094	3052
<b>C. Variable Costs</b>	2951	2920	2980	2950
 <b>Contribution Margin</b>	 2091	 2077	 1860	 2009
<b>(A - B - C)</b>				

The contribution margin can be used to determine the amount of debt load that a farm enterprise can carry. Table 14 shows the total debt load that a farm enterprise can carry on a per cow basis at various interest rates and various cow productivity levels. It is based on the average costs and returns between 2014 and 2016. An assumption behind the analysis is that feed costs vary directly with the level of production and market values. Forage and barley prices remained high at the start of 2016 but with challenges at both seeding (dry) and harvest (cold and wet), the prices dropped by the end of the year.

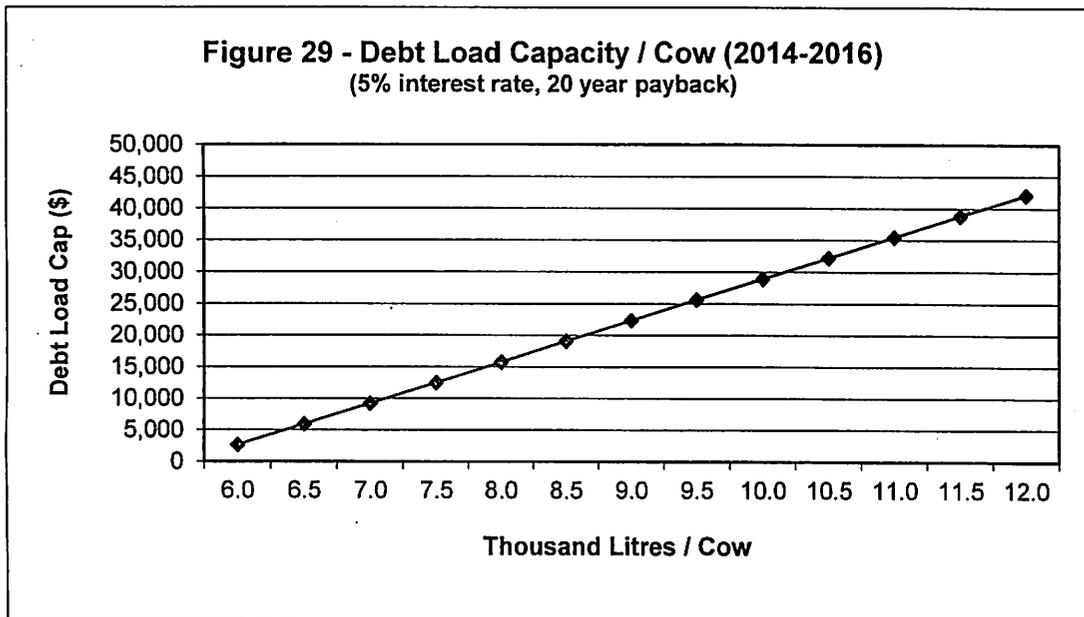
**Table 14**  
**Acceptable Total Debt-Load per Cow in Alberta, 2014-2016**

Milk Productivity (litres/cow)	Interest Rates					
	3%	4%	5%	6%	7%	8%
6000	3,166	2,892	2,652	2,441	2,255	2,089
6500	7,088	6,475	5,937	5,464	5,047	4,678
7000	11,010	10,057	9,222	8,488	7,840	7,266
7500	14,931	13,640	12,507	11,512	10,632	9,854
8000	18,853	17,222	15,793	14,535	13,425	12,442
8500	22,775	20,805	19,078	17,559	16,218	15,030
9000	26,697	24,387	22,363	20,582	19,010	17,618
9500	30,619	27,970	25,648	23,606	21,803	20,206
10000	34,540	31,552	28,933	26,629	24,596	22,794
10500	38,462	35,134	32,218	29,653	27,388	25,382
11000	42,384	38,717	35,503	32,676	30,181	27,971
11500	46,306	42,299	38,788	35,700	32,974	30,559
12000	50,227	45,882	42,073	38,723	35,766	33,147

\* With a 20 year repayment period

For example, at a milk production level of 8,500 litres per cow, the contribution margin would be \$1,531 per cow. This margin, if amortized over 20 years at 5 percent interest, results in a debt carrying capacity of \$19,078 per cow.

Figure 29 shows the impact of milk productivity on the debt load carrying capacity of dairy enterprises given an interest rate of 5 percent. As productivity declines, the debt carrying capacity of each cow also declines. Conversely, the debt carrying capacity rises as productivity increases.



Another way to use this information is to measure the minimum level of productivity required to carry a given debt load at a specific interest rate. As an example, if a farm has a debt of \$20,000 per cow, then at an interest rate of 5 percent, this amount of debt per cow would be supported at production levels of about 8,450 litres per cow and above (Table 14). In general, as productivity increases and/or interest rates fall, debt repayment or financing capacity increases.

To this point, the value of quota has not been included in the analysis. If externally financed quota valued at \$36,733 per cow (the average value of total production quota for one cow in the 2016 Dairy Cost Study) is added to current debt of \$4,988 per cow, the total amount of debt load per cow would be \$41,721. The ability to carry this amount of debt per cow depends upon the prevailing interest rate and the productivity of each cow carrying debt. As illustrated in Table 14, this level of debt would require a production level of around 12,000 litres per cow, assuming an interest rate of 5 percent. Average interest rate for 2016 was 3.4 percent, which drops this required production level.

## Impact of Quota Values on Dairy Returns

The cost and return analysis in this study does not include any value for milk quota. However, new entrants into the dairy business would have to purchase quota. When the financing of these quota purchases (at the 2016 Dairy Cost Study average quota price) is taken into account, the average rate of return for new entrants would be a negative 3.8 percent (Table 15). This means that the borrowing costs of capital used to purchase quota in 2016 exceeded the financial returns obtained from producing milk. The assumption in this analysis was that all funds needed to purchase quota were borrowed at 3.4 percent, the average interest rate in the study.

**Table 15**

### Impact of Quota Value on Dairy Returns, 2016

	2016 Study Average	Including Quota Value*
--- \$ per Farm ---		
Dairy Investment	2,749,641	7,908,147
Debt	804,307	5,962,813
Equity	1,945,334	1,945,334
--- \$ per hL Sold ---		
Equity	129.91	129.91
Gross Income	85.45	85.45
Production Costs	78.81	78.81
Interest Cost for Quota		11.58
Potential Total Cost	78.81	90.39
Return to Equity(\$ per hL)	6.64	-4.94
Return to Equity (%)	5.1	-3.8

\*Applicable to new entrants who borrow 100 percent of funds needed to purchase total production quota at the average value from the 2016 Dairy Cost Study of \$38,077 per kg/day.

# **APPENDIX A**

## **2016 Dairy Cost Study Alberta Average**

Alberta  
 2016 Dairy Cost Study - Business Analysis  
 45 Participants  
 Table 1 Dairy Enterprise Costs and Returns

	TOTAL ENTERPRISE	PER COW	PER HL SOLD	PERCENT FROM INCOME
<b>INCOME:</b>				
MILK SALES	1,184,941.88	7,348.65	79.13	
POOL ADJUSTMENTS (+ -)	458.13	2.84	.03	
MISCELLANEOUS RECEIPTS	6,508.70	40.36	.43	
NET CATTLE SALES (+ -)	76,043.33	471.60	5.08	
NET INVENTORY CHANGE (+ -)	11,527.77	71.49	.77	
<b>GROSS INCOME -----</b>	<b>1,279,479.80</b>	<b>7,934.94</b>	<b>85.45</b>	<b>100.00</b>
<b>EXPENSES:</b>				
GRAIN	75,157.04	466.10	5.02	
COMPLETE FEED	156,137.41	968.32	10.43	
SUPPLEMENT	59,058.41	366.26	3.94	
MINERALS & VITAMINS	11,131.24	69.03	.74	
ROUGHAGE	193,991.51	1,203.08	12.96	
PROCESSING COSTS	3,488.17	21.63	.23	
<b>TOTAL FEED COSTS -----</b>	<b>498,963.78</b>	<b>3,094.42</b>	<b>33.32</b>	<b>39.00</b>
BEDDING AND SUPPLIES	46,027.99	285.45	3.07	
BREEDING	16,114.45	99.94	1.08	
VET. AND MEDICINE	29,926.83	185.60	2.00	
MILK HAULING	51,971.94	322.31	3.47	
PRODUCER'S FEES	32,182.65	199.59	2.15	
UTILITIES	24,744.89	153.46	1.65	
FUEL, OIL, LUBE	16,739.97	103.82	1.12	
BLDG. & MACH. REPAIRS	39,327.05	243.89	2.63	
MISCELLANEOUS	52,646.06	326.49	3.52	
<b>TOTAL OTHER VARIABLE COSTS ----</b>	<b>309,681.84</b>	<b>1,920.55</b>	<b>20.68</b>	<b>24.20</b>
HIRED LABOUR	50,921.22	315.80	3.40	
FAMILY LABOUR	119,916.42	743.68	8.01	
<b>TOTAL LABOUR COSTS -----</b>	<b>170,837.64</b>	<b>1,059.48</b>	<b>11.41</b>	<b>13.35</b>
<b>TOTAL VARIABLE COSTS</b>	<b>979,483.26</b>	<b>6,074.45</b>	<b>65.41</b>	<b>76.55</b>
RENT	2,834.93	17.58	.19	
TAXES AND INSURANCE	23,024.77	142.79	1.54	
DEPRECIATION	147,706.46	916.03	9.86	
INTEREST (CAP. DEBT)	26,997.98	167.43	1.80	
<b>TOTAL CAPITAL COSTS -----</b>	<b>200,564.14</b>	<b>1,243.84</b>	<b>13.39</b>	<b>15.68</b>
<b>TOTAL PRODUCTION COSTS</b>	<b>1,180,047.40</b>	<b>7,318.29</b>	<b>78.81</b>	<b>92.23</b>
<hr/>				
CONTRIBUTION MARGIN (\$)	299,996.54	1,860.49	20.03	
RETURN TO EQUITY (\$)	99,432.40	616.65	6.64	7.77
MILK PRICE			79.16	
INVENTORY ADJUSTMENT			6.28	
RETURN TO EQUITY (%)			5.11	
AVERAGE CAP. DEBT INTEREST RATE (%)			3.36	

Alberta  
 2016 Dairy Cost Study - Business Analysis  
 45 Participants  
 Table 2 Statement of Investment

**LAND BUILDINGS & EQUIPMENT**

	AGE	DEPRECIATION	DAIRY INVESTMENT
DAIRY BUILDINGS	11.55	66,555.54	1,644,521.84
POWER MACHINERY	8.13	27,718.60	185,350.79
DAIRY EQUIPMENT	11.25	33,523.66	132,679.41
OTHER EQUIPMENT	8.85	19,908.66	86,769.35
TOTAL EQUIPMENT	9.30	81,150.92	404,799.55
LAND			148,087.84
SUPPLIES			17,798.80
** SUBTOTAL **		147,706.46	2,215,208.04

**DAIRY LIVESTOCK**

	--- BEGIN YEAR ---		--- END OF YEAR ---		AVERAGE VALUE
	NUMBER	VALUE	NUMBER	VALUE	
COWS	161.00	346,740.69	162.51	349,995.13	348,367.91
BRED HEIFERS	47.38	94,755.56	50.64	101,288.89	98,022.22
OPEN HEIFERS	58.29	69,946.67	59.18	71,013.33	70,480.00
HEIFER CALVES	43.09	12,926.67	43.73	13,120.00	13,023.33
BULL CALVES	8.00	1,200.00	8.98	1,346.67	1,273.33
BULLS	2.07	3,100.00	2.29	3,433.33	3,266.67
** SUBTOTAL **	319.82	528,669.58	327.33	540,197.35	534,433.47

TOTAL DAIRY INVESTMENT .....	2,749,641.51
CAPITAL LOANS	804,307.26
OPERATOR EQUITY	1,945,334.24
INVESTMENT PER COW	17,052.43
DEBT/CAPITAL RATIO	.29
CAPITAL TURNOVER ( YR )	2.15

**HERD SIZE**

	Average	Median
NUMBER OF DAIRY COWS	161.25	128.92
NUMBER OF ANIMAL UNITS	254.32	199.83
DRY COWS ( % )	19.27	
CALF CROP ( % )	98.97	
PASTURE PER COW ( AC. )	.28	

**CATTLE SALES & PURCHASES**

	NUMBER SOLD	SELLING PRICE	NUMBER PURCHASED	PURCHASE PRICE
COWS	42.96	1,336.14	1.31	2,612.10
BRED HEIFERS	4.93	2,175.84	.71	2,623.01
OPEN HEIFERS	3.13	1,977.75	.00	.00
HEIFER CALVES	.67	253.50	.07	876.04
BULL CALVES	41.98	190.41	.00	.00
BULLS	1.36	1,996.78	1.42	2,674.00
TOTAL VALUE		85,194.75		9,151.42

**Alberta**  
**2016 Dairy Cost Study - Business Analysis**  
**45 Participants**  
**Table 3 Labour and Management**

<u>LABOUR</u>	HOURS	VALUE	HOURLY RATE
OPERATOR LABOUR	3,420.63	71,833.30	21.00
HIRED LABOUR	2,447.66	50,921.22	20.80
FAMILY UNPAID LABOUR	2,471.41	48,083.12	19.46
TOTAL	8,339.70	170,837.64	20.48
RETURN TO FAMILY LABOUR	.91		
MAN EQUIVALENTS	3.34		
LABOUR HOURS PER COW	51.72		
YEARS FARMING	26.39		

<u>MILK PRODUCTION</u>	HL.	% OF TOTAL	VALUE	AVERAGE PRICE / HL
MILK SALES	14,974.20	97.54	1,184,941.88	79.13
OTHER MILK PRODUCED	377.84	2.46		
TOTAL	15,352.04	100.00		

	AVERAGE COMPONENT PRICES (\$ / KG)
BUTTERFAT TEST	4.07 KG / HL 11.84
PROTEIN	3.33 KG / HL 3.66
L.O.S.	5.73 KG / HL 3.35
MILK PRODUCTION PER COW	9,520.86 LITRES / YEAR

<u>QUOTA INFORMATION</u>	
TPQ HOLDINGS	155.56 KG / DAY
TPQ PRICE	38,076.82 \$ / KG / DAY
CREDIT PRICE	9.28 \$ / KG

<u>MANAGEMENT FACTORS</u>	
COST PER HL	78.81
MILK/FEED (KG) RATIO	2.14 LITRES
MILK/LABOUR (HR) RATIO	184.08 LITRES
MILK/CAPITAL (\$) RATIO	.56 LITRES

**Alberta**  
**2016 Dairy Cost Study - Business Analysis**  
**45 Participants**  
**Table 4 Feed Report**

<u>CONCENTRATES</u>	— PURCHASED —		— HOMEGROWN—	
	QUANTITY (TONNES)	PRICE	QUANTITY (TONNES)	PRICE
OATS	2.64	119.42	.53	186.16
BARLEY	78.20	187.79	114.28	176.17
WHEAT	.00	.00	.17	176.60
MIXED GRAIN	34.73	464.10	.00	.00
BREW GRAIN (DRY EQ. )	13.29	241.20		
BEET PULP	6.44	239.75		
OTHER PURCHASED	56.00	339.72		
DAIRY RATION	274.81	508.65		
CALF FEED	20.62	493.74		
MILK REPLACER	1.73	3,567.50		
SUPPLEMENT	96.84	587.87		
MOLASSES	6.51	327.70		
SALT	2.18	515.20		
MINERALS & VITAMINS	8.13	1,230.84		
SUBTOTAL -----	602.11	281,221.01	114.99	20,263.09
<u>ROUGHAGE</u>				
ALFALFA HAY	162.28	200.22	153.56	196.26
ALFALFA PELLETS	.00	.00		
STRAW FED	7.66	65.45	18.81	62.63
GREENFEED	1.13	135.00	1.46	142.71
SILAGE/HAYLAGE (DRY EQ.)	241.61	129.92	572.10	171.18
SUBTOTAL -----	412.68	64,535.30	745.93	129,456.21
GRINDING & PROCESSING		3,488.17		
GRAND TOTAL FEED COSTS -----		349,244.49		149,719.29
BEDDING	192.42	64.24	84.64	61.47
AV. PRICE:	CONCENTRATE	420.42 \$/TONNE		
	ROUGHAGE	167.44 \$/TONNE		
FED PER COW:	CONCENTRATE	4.45 TONNES		
	ROUGHAGE	7.19 TONNES		
% HOME GROWN:	CONCENTRATE	16.04 %		
	ROUGHAGE	64.38 %		

## **APPENDIX B**

### **2016 Dairy Cost Study Northern Alberta**

Northern Alberta  
2016 Dairy Cost Study - Business Analysis  
15 Participants  
Table 1 Dairy Enterprise Costs and Returns

	TOTAL ENTERPRISE	PER COW	PER HL SOLD	PERCENT FROM INCOME
<b>INCOME:</b>				
MILK SALES	1,098,114.35	6,562.22	79.59	
POOL ADJUSTMENTS (+ -)	438.15	2.62	.03	
MISCELLANEOUS RECEIPTS	6,597.88	39.43	.48	
NET CATTLE SALES (+ -)	102,810.22	614.38	7.45	
NET INVENTORY CHANGE (+ -)	11,721.93	70.05	.85	
<b>GROSS INCOME -----</b>	<b>1,219,682.52</b>	<b>7,288.70</b>	<b>88.40</b>	<b>100.00</b>
<b>EXPENSES:</b>				
GRAIN	74,291.57	443.96	5.38	
COMPLETE FEED	122,651.90	732.96	8.89	
SUPPLEMENT	50,959.08	304.53	3.69	
MINERALS & VITAMINS	7,738.59	46.24	.56	
ROUGHAGE	172,027.58	1,028.02	12.47	
PROCESSING COSTS	10,256.51	61.29	.74	
<b>TOTAL FEED COSTS -----</b>	<b>437,925.23</b>	<b>2,617.00</b>	<b>31.74</b>	<b>35.90</b>
BEDDING AND SUPPLIES	39,003.03	233.08	2.83	
BREEDING	16,671.44	99.63	1.21	
VET. AND MEDICINE	30,961.24	185.02	2.24	
MILK HAULING	47,973.33	286.68	3.48	
PRODUCER'S FEES	29,237.99	174.72	2.12	
UTILITIES	21,224.08	126.83	1.54	
FUEL, OIL, LUBE	14,281.55	85.35	1.04	
BLDG. & MACH. REPAIRS	39,825.64	237.99	2.89	
MISCELLANEOUS	62,368.04	372.70	4.52	
<b>TOTAL OTHER VARIABLE COSTS ----</b>	<b>301,546.34</b>	<b>1,802.01</b>	<b>21.85</b>	<b>24.72</b>
HIRED LABOUR	64,489.84	385.38	4.67	
FAMILY LABOUR	103,304.60	617.34	7.49	
<b>TOTAL LABOUR COSTS -----</b>	<b>167,794.44</b>	<b>1,002.72</b>	<b>12.16</b>	<b>13.76</b>
<b>TOTAL VARIABLE COSTS</b>	<b>907,266.01</b>	<b>5,421.73</b>	<b>65.75</b>	<b>74.39</b>
RENT	5,563.64	33.25	.40	
TAXES AND INSURANCE	24,096.15	144.00	1.75	
DEPRECIATION	132,255.55	790.35	9.59	
INTEREST (CAP.DEBT)	31,531.89	188.43	2.29	
<b>TOTAL CAPITAL COSTS -----</b>	<b>193,447.23</b>	<b>1,156.02</b>	<b>14.02</b>	<b>15.86</b>
<b>TOTAL PRODUCTION COSTS</b>	<b>1,100,713.24</b>	<b>6,577.75</b>	<b>79.77</b>	<b>90.25</b>
CONTRIBUTION MARGIN (\$)	312,416.51	1,866.97	22.64	
RETURN TO EQUITY (\$)	118,969.28	710.95	8.62	9.75
MILK PRICE			79.62	
INVENTORY ADJUSTMENT			8.78	
RETURN TO EQUITY (%)			7.48	
AVERAGE CAP. DEBT INTEREST RATE (%)			3.38	

**Northern Alberta**  
**2016 Dairy Cost Study - Business Analysis**  
**15 Participants**  
**Table 2 Statement of Investment**

**LAND BUILDINGS & EQUIPMENT**

	AGE	DEPRECIATION	DAIRY INVESTMENT
DAIRY BUILDINGS	12.21	62,330.07	1,548,342.30
POWER MACHINERY	9.12	19,525.33	128,641.64
DAIRY EQUIPMENT	11.01	36,161.14	144,561.07
OTHER EQUIPMENT	9.83	14,239.02	59,724.74
TOTAL EQUIPMENT	10.04	69,925.49	332,927.46
LAND			90,346.67
SUPPLIES			17,733.90
<b>** SUBTOTAL **</b>		<b>132,255.55</b>	<b>1,989,350.32</b>

**DAIRY LIVESTOCK**

	-- BEGIN YEAR --		-- END OF YEAR --		AVERAGE VALUE
	NUMBER	VALUE	NUMBER	VALUE	
COWS	169.87	351,875.79	170.27	352,704.38	352,290.08
BRED HEIFERS	43.47	86,933.33	46.13	92,266.67	89,600.00
OPEN HEIFERS	54.27	65,120.00	58.00	69,600.00	67,360.00
HEIFER CALVES	67.47	20,240.00	70.13	21,040.00	20,640.00
BULL CALVES	16.20	2,430.00	18.07	2,710.00	2,570.00
BULLS	.87	1,300.00	.87	1,300.00	1,300.00
<b>** SUBTOTAL **</b>	<b>352.13</b>	<b>527,899.12</b>	<b>363.47</b>	<b>539,621.05</b>	<b>533,760.08</b>

<b>TOTAL DAIRY INVESTMENT</b> .....	<b>2,523,110.40</b>
CAPITAL LOANS	932,774.31
OPERATOR EQUITY	1,590,336.09
INVESTMENT PER COW	15,077.85
DEBT/CAPITAL RATIO	.37
CAPITAL TURNOVER (YR)	2.07

**HERD SIZE**

	Average	Median
NUMBER OF DAIRY COWS	167.34	109.25
NUMBER OF ANIMAL UNITS	267.03	170.17
DRY COWS (%)	23.62	
CALF CROP (%)	100.04	
PASTURE PER COW (AC.)	.20	

**CATTLE SALES & PURCHASES**

	NUMBER SOLD	SELLING PRICE	NUMBER PURCHASED	PURCHASE PRICE
COWS	42.00	1,467.32	.67	1,990.00
BRED HEIFERS	8.33	2,261.79	.13	2,350.00
OPEN HEIFERS	5.47	2,614.63	.00	.00
HEIFER CALVES	.53	339.38	.20	876.04
BULL CALVES	48.80	194.24	.00	.00
BULLS	.40	1,407.75	.13	2,750.00
<b>TOTAL VALUE</b>		<b>104,992.10</b>		<b>2,181.87</b>

Northern Alberta  
 2016 Dairy Cost Study - Business Analysis  
 15 Participants  
 Table 3 Labour and Management

LABOUR

	HOURS	VALUE	HOURLY RATE
OPERATOR LABOUR	2,583.43	54,252.10	21.00
HIRED LABOUR	3,318.92	64,489.84	19.43
FAMILY UNPAID LABOUR	2,373.67	49,052.50	20.67
<b>TOTAL</b>	<b>8,276.02</b>	<b>167,794.44</b>	<b>20.27</b>
RETURN TO FAMILY LABOUR	9.55		
MAN EQUIVALENTS	3.31		
LABOUR HOURS PER COW	49.46		
YEARS FARMING	24.97		

MILK PRODUCTION

	HL.	% OF TOTAL	VALUE	AVERAGE PRICE / HL
MILK SALES	13,797.86	97.08	1,098,114.35	79.59
OTHER MILK PRODUCED	415.12	2.92		
<b>TOTAL</b>	<b>14,212.98</b>	<b>100.00</b>		

AVERAGE  
COMPONENT PRICES (\$ / KG)

BUTTERFAT TEST	4.13 KG / HL	11.83
PROTEIN	3.38 KG / HL	3.66
L.O.S.	5.72 KG / HL	3.35
MILK PRODUCTION PER COW	8,493.53 LITRES / YEAR	

QUOTA INFORMATION

TPQ HOLDINGS	143.60 KG / DAY
TPQ PRICE	37,846.26 \$ / KG / DAY
CREDIT PRICE	9.41 \$ / KG

MANAGEMENT FACTORS

COST PER HL	79.77
MILK/FEED (KG) RATIO	2.00 LITRES
MILK/LABOUR (HR) RATIO	171.74 LITRES
MILK/CAPITAL (\$) RATIO	.56 LITRES

Northern Alberta  
2016 Dairy Cost Study - Business Analysis  
15 Participants  
Table 4 Feed Report

<u>CONCENTRATES</u>	-- PURCHASED --		-- HOMEGROWN--	
	QUANTITY (TONNES)	PRICE	QUANTITY (TONNES)	PRICE
OATS	.00	.00	.00	.00
BARLEY	211.55	186.89	96.46	159.80
WHEAT	.00	.00	.00	190.49
MIXED GRAIN	.00	.00	.00	.00
BREW GRAIN (DRY EQ.)	13.67	320.95		
BEET PULP	9.79	216.31		
OTHER PURCHASED	39.98	321.09		
DAIRY RATION	219.72	529.79		
CALF FEED	8.37	541.40		
MILK REPLACER	.49	3,474.21		
SUPPLEMENT	102.54	489.51		
MOLASSES	2.36	325.04		
SALT	2.46	568.44		
MINERALS & VITAMINS	4.89	1,297.47		
SUBTOTAL -----	615.81	240,226.71	96.46	15,414.43
 <u>ROUGHAGE</u>				
ALFALFA HAY	99.77	219.60	77.12	156.34
ALFALFA PELLETS	.00	.00		
STRAW FED	15.19	65.67	2.78	54.90
GREENFEED	.00	.00	.00	.00
SILAGE/HAYLAGE (DRY EQ.)	443.50	133.08	560.99	138.85
SUBTOTAL -----	558.46	81,925.47	640.88	90,102.11
GRINDING & PROCESSING		10,256.51		
GRAND TOTAL FEED COSTS -----		332,408.69		105,516.55
BEDDING	175.10	71.55	77.80	59.14
AV. PRICE:	CONCENTRATE	358.91 \$/TONNE		
	ROUGHAGE	143.43 \$/TONNE		
FED PER COW:	CONCENTRATE	4.26 TONNES		
	ROUGHAGE	7.17 TONNES		
% HOME GROWN:	CONCENTRATE	13.54 %		
	ROUGHAGE	53.44 %		

## **APPENDIX C**

### **2016 Dairy Cost Study Southern Average**

Southern Alberta  
2016 Dairy Cost Study - Business Analysis  
30 Participants  
Table 1 Dairy Enterprise Costs and Returns

	TOTAL ENTERPRISE	PER COW	PER HL SOLD	PERCENT FROM INCOME
<b>INCOME:</b>				
MILK SALES	1,228,355.64	7,764.57	78.93	
POOL ADJUSTMENTS (+ -)	468.13	2.96	.03	
MISCELLANEOUS RECEIPTS	6,464.11	40.86	.42	
NET CATTLE SALES (+ -)	62,659.88	396.08	4.03	
NET INVENTORY CHANGE (+ -)	11,504.08	72.72	.74	
<b>GROSS INCOME</b> .....	<b>1,309,451.83</b>	<b>8,277.19</b>	<b>84.14</b>	<b>100.00</b>
<b>EXPENSES:</b>				
GRAIN	75,589.77	477.81	4.86	
COMPLETE FEED	172,880.17	1,092.79	11.11	
SUPPLEMENT	63,108.08	398.91	4.06	
MINERALS & VITAMINS	12,827.56	81.08	.82	
ROUGHAGE	204,973.47	1,295.66	13.17	
PROCESSING COSTS	104.00	.66	.01	
<b>TOTAL FEED COSTS</b> .....	<b>529,483.05</b>	<b>3,346.92</b>	<b>34.02</b>	<b>40.44</b>
BEDDING AND SUPPLIES	49,540.48	313.15	3.18	
BREEDING	15,835.95	100.10	1.02	
VET. AND MEDICINE	29,409.63	185.90	1.89	
MILK HAULING	53,971.25	341.16	3.47	
PRODUCER'S FEES	33,654.98	212.74	2.16	
UTILITIES	26,505.29	167.54	1.70	
FUEL, OIL, LUBE	17,969.19	113.59	1.15	
BLDG. & MACH. REPAIRS	39,077.76	247.01	2.51	
MISCELLANEOUS	47,785.07	302.05	3.07	
<b>TOTAL OTHER VARIABLE COSTS</b> .....	<b>313,749.60</b>	<b>1,983.25</b>	<b>20.16</b>	<b>23.96</b>
HIRED LABOUR	44,136.91	278.99	2.84	
FAMILY LABOUR	128,222.33	810.51	8.24	
<b>TOTAL LABOUR COSTS</b> .....	<b>172,359.24</b>	<b>1,089.50</b>	<b>11.08</b>	<b>13.16</b>
<b>TOTAL VARIABLE COSTS</b>	<b>1,015,591.89</b>	<b>6,419.67</b>	<b>65.26</b>	<b>77.56</b>
RENT	1,470.57	9.30	.09	
TAXES AND INSURANCE	22,489.08	142.16	1.45	
DEPRECIATION	155,431.91	982.50	9.99	
INTEREST (CAP.DEBT)	24,731.03	156.33	1.59	
<b>TOTAL CAPITAL COSTS</b> .....	<b>204,122.59</b>	<b>1,290.28</b>	<b>13.12</b>	<b>15.59</b>
<b>TOTAL PRODUCTION COSTS</b>	<b>1,219,714.48</b>	<b>7,709.95</b>	<b>78.38</b>	<b>93.15</b>
CONTRIBUTION MARGIN (\$)	293,859.95	1,857.52	18.88	
RETURN TO EQUITY (\$)	89,737.35	567.24	5.77	6.85
MILK PRICE			78.96	
INVENTORY ADJUSTMENT			5.18	
RETURN TO EQUITY (%)			4.23	
AVERAGE CAP. DEBT INTEREST RATE (%)			3.34	

Southern Alberta  
2016 Dairy Cost Study - Business Analysis  
30 Participants

Table 2 Statement of Investment

LAND BUILDINGS & EQUIPMENT

	AGE	DEPRECIATION	DAIRY INVESTMENT
DAIRY BUILDINGS	11.24	68,668.27	1,692,539.45
POWER MACHINERY	7.82	31,815.23	213,734.49
DAIRY EQUIPMENT	11.39	32,204.92	126,738.94
OTHER EQUIPMENT	8.55	22,743.49	100,277.26
TOTAL EQUIPMENT	9.01	86,763.64	440,750.69
LAND			176,958.43
SUPPLIES			17,831.26
** SUBTOTAL **		155,431.91	2,328,079.84

DAIRY LIVESTOCK

	-- BEGIN YEAR --		-- END OF YEAR --		AVERAGE VALUE
	NUMBER	VALUE	NUMBER	VALUE	
COWS	156.57	343,998.28	158.63	348,539.02	346,268.65
BRED HEIFERS	49.33	98,666.67	52.90	105,800.00	102,233.33
OPEN HEIFERS	60.30	72,360.00	59.77	71,720.00	72,040.00
HEIFER CALVES	30.90	9,270.00	30.53	9,160.00	9,215.00
BULL CALVES	3.90	585.00	4.43	665.00	625.00
BULLS	2.67	4,000.00	3.00	4,500.00	4,250.00
** SUBTOTAL **	303.67	528,879.94	309.27	540,384.02	534,631.98

TOTAL DAIRY INVESTMENT -----	2,862,711.82
CAPITAL LOANS	740,073.74
OPERATOR EQUITY	2,122,638.08
INVESTMENT PER COW	18,095.52
DEBT/CAPITAL RATIO	.26
CAPITAL TURNOVER ( YR )	2.19

HERD SIZE

	Average	Median
NUMBER OF DAIRY COWS	158.20	140.04
NUMBER OF ANIMAL UNITS	247.97	219.25
DRY COWS ( % )	16.96	
CALF CROP ( % )	98.40	
PASTURE PER COW ( AC. )	.32	

CATTLE SALES & PURCHASES

	NUMBER SOLD	SELLING PRICE	NUMBER PURCHASED	PURCHASE PRICE
COWS	43.43	1,272.72	1.63	2,739.06
BRED HEIFERS	3.23	2,065.09	1.00	2,641.21
OPEN HEIFERS	1.97	1,092.59	.00	.00
HEIFER CALVES	.73	222.27	.00	.00
BULL CALVES	38.57	187.99	.00	.00
BULLS	1.83	2,061.04	2.07	2,671.55
TOTAL VALUE		75,296.08		12,636.20

**Southern Alberta  
2016 Dairy Cost Study - Business Analysis  
30 Participants**

**Table 3 Labour and Management**

<u>LABOUR</u>	HOURS	VALUE	HOURLY RATE	
OPERATOR LABOUR	3,839.23	80,623.90	21.00	
HIRED LABOUR	2,012.03	44,136.91	21.94	
FAMILY UNPAID LABOUR	2,520.28	47,598.43	18.89	
TOTAL	8,371.55	172,359.24	20.59	
RETURN TO FAMILY LABOUR	(2.44)			
MAN EQUIVALENTS	3.35			
LABOUR HOURS PER COW	52.92			
YEARS FARMING	27.10			
<u>MILK PRODUCTION</u>	HL.	% OF TOTAL	VALUE	AVERAGE PRICE / HL
MILK SALES	15,562.37	97.74	1,228,355.64	78.93
OTHER MILK PRODUCED	359.19	2.26		
TOTAL	15,921.57	100.00		
			AVERAGE COMPONENT PRICES (\$ / KG)	
BUTTERFAT TEST	4.05 KG / HL		11.85	
PROTEIN	3.31 KG / HL		3.66	
L.O.S.	5.73 KG / HL		3.35	
MILK PRODUCTION PER COW	10,064.20 LITRES / YEAR			
<u>QUOTA INFORMATION</u>				
TPQ HOLDINGS	161.54 KG / DAY			
TPQ PRICE	38,302.91 \$ / KG / DAY			
CREDIT PRICE	9.20 \$ / KG			
<u>MANAGEMENT FACTORS</u>				
COST PER HL	78.38			
MILK/FEED (KG) RATIO	2.21 LITRES			
MILK/LABOUR (HR) RATIO	190.19 LITRES			
MILK/CAPITAL (\$) RATIO	.56 LITRES			

**Southern Alberta  
2016 Dairy Cost Study - Business Analysis  
30 Participants  
Table 4 Feed Report**

<u>CONCENTRATES</u>	— PURCHASED —		— HOMEGROWN—	
	QUANTITY (TONNES)	PRICE	QUANTITY (TONNES)	PRICE
OATS	3.96	119.42	.80	186.16
BARLEY	11.53	196.05	123.19	182.58
WHEAT	.00	.00	.26	176.58
MIXED GRAIN	52.10	464.10	.00	.00
BREW GRAIN (DRY EQ. )	13.09	199.57		
BEET PULP	4.77	263.81		
OTHER PURCHASED	64.01	345.54		
DAIRY RATION	302.35	500.97		
CALF FEED	26.75	486.28		
MILK REPLACER	2.35	3,577.31		
SUPPLEMENT	93.99	641.52		
MOLASSES	8.58	328.06		
SALT	2.03	482.94		
MINERALS & VITAMINS	9.76	1,214.15		
SUBTOTAL .....	595.27	301,718.17	124.25	22,687.41
<u>ROUGHAGE</u>				
ALFALFA HAY	193.53	195.22	191.77	204.29
ALFALFA PELLETS	.00	.00		
STRAW FED	3.90	65.03	26.82	63.03
GREENFEED	1.70	135.00	2.20	142.71
SILAGE/HAYLAGE (DRY EQ.)	140.66	124.95	577.65	186.88
SUBTOTAL .....	339.79	55,840.22	798.45	149,133.26
GRINDING & PROCESSING		104.00		
GRAND TOTAL FEED COSTS .....		357,662.38		171,820.67
BEDDING	201.08	61.06	88.06	62.50
AV. PRICE:	CONCENTRATE	450.86 \$/TONNE		
	ROUGHAGE	180.08 \$/TONNE		
FED PER COW:	CONCENTRATE	4.55 TONNES		
	ROUGHAGE	7.19 TONNES		
% HOME GROWN:	CONCENTRATE	17.27 %		
	ROUGHAGE	70.15 %		

# **APPENDIX D**

## **Dairy Cost Study Alberta 5 Year Average (2012 – 2016)**

**Alberta Dairy Cost Study  
Business Analysis (2012 - 2016)  
Average 49 Participants**

**Table 1 Dairy Enterprise Costs and Returns**

	TOTAL ENTERPRISE	PER COW	PER HL SOLD	PERCENT FROM INCOME
<b>INCOME:</b>				
MILK SALES	1,026,934.05	7,158.05	80.50	
POOL ADJUSTMENTS (+ -)	3,267.74	23.19	.27	
MISCELLANEOUS RECEIPTS	5,799.44	40.51	.46	
NET CATTLE SALES (+ -)	59,653.29	411.20	4.58	
NET INVENTORY CHANGE (+ -)	12,912.86	90.10	1.01	
<b>GROSS INCOME -----</b>	<b>1,108,567.38</b>	<b>7,723.06</b>	<b>86.82</b>	<b>100.00</b>
<b>EXPENSES:</b>				
GRAIN	59,798.21	415.60	4.68	
COMPLETE FEED	144,430.43	1,009.58	11.38	
SUPPLEMENT	51,049.63	354.89	3.98	
MINERALS & VITAMINS	9,956.13	69.47	.78	
ROUGHAGE	151,889.45	1,051.79	11.77	
PROCESSING COSTS	2,731.97	18.96	.21	
<b>TOTAL FEED COSTS -----</b>	<b>419,855.83</b>	<b>2,920.29</b>	<b>32.81</b>	<b>37.79</b>
BEDDING AND SUPPLIES	36,334.01	252.23	2.83	
BREEDING	12,678.61	88.06	.99	
VET. AND MEDICINE	23,545.99	163.53	1.84	
MILK HAULING	40,608.41	281.67	3.16	
PRODUCER'S FEES	26,623.68	185.15	2.08	
UTILITIES	21,953.83	153.24	1.73	
FUEL, OIL, LUBE	17,405.74	122.20	1.38	
BLDG. & MACH. REPAIRS	30,546.76	211.86	2.38	
MISCELLANEOUS	40,852.16	283.72	3.18	
<b>TOTAL OTHER VARIABLE COSTS -----</b>	<b>250,549.19</b>	<b>1,741.67</b>	<b>19.56</b>	<b>22.53</b>
HIRED LABOUR	42,684.68	297.31	3.34	
FAMILY LABOUR	115,098.96	805.36	9.08	
<b>TOTAL LABOUR COSTS -----</b>	<b>157,783.64</b>	<b>1,102.67</b>	<b>12.42</b>	<b>14.31</b>
<b>TOTAL VARIABLE COSTS</b>	<b>828,188.65</b>	<b>5,764.62</b>	<b>64.78</b>	<b>74.63</b>
RENT	2,475.90	17.14	.19	
TAXES AND INSURANCE	20,613.13	143.76	1.62	
DEPRECIATION	114,712.70	796.33	8.95	
INTEREST (CAP.DEBT)	23,626.05	165.15	1.86	
<b>TOTAL CAPITAL COSTS -----</b>	<b>161,427.78</b>	<b>1,122.38</b>	<b>12.62</b>	<b>14.54</b>
<b>TOTAL PRODUCTION COSTS</b>	<b>989,616.43</b>	<b>6,887.00</b>	<b>77.40</b>	<b>89.17</b>
CONTRIBUTION MARGIN (\$)	280,378.73	1,958.44	22.04	
RETURN TO EQUITY (\$)	118,950.95	836.05	9.42	10.83
MILK PRICE			80.77	
INVENTORY ADJUSTMENT			6.05	
RETURN TO EQUITY (%)			7.87	
AVERAGE CAP. DEBT INTEREST RATE (%)			4.09	

**Alberta Dairy Cost Study  
Business Analysis (2012 - 2016)  
Average 49 Participants  
Table 2 Statement of Investment**

**LAND BUILDINGS & EQUIPMENT**

	AGE	DEPRECIATION	DAIRY INVESTMENT
DAIRY BUILDINGS	12.20	49,615.03	1,232,240.21
POWER MACHINERY	8.11	23,259.06	155,564.30
DAIRY EQUIPMENT	11.35	27,061.07	106,627.85
OTHER EQUIPMENT	8.82	14,777.55	64,386.15
TOTAL EQUIPMENT	9.28	65,097.67	326,578.30
LAND			119,452.72
SUPPLIES			15,778.34
** SUBTOTAL **		114,712.70	1,694,049.58

**DAIRY LIVESTOCK**

	--- BEGIN YEAR ---		--- END OF YEAR ---		AVERAGE VALUE
	NUMBER	VALUE	NUMBER	VALUE	
COWS	142.78	285,618.95	146.45	293,131.85	289,375.40
BRED HEIFERS	41.64	75,561.37	43.29	293,131.85	77,154.39
OPEN HEIFERS	52.65	60,680.75	54.89	293,131.85	61,729.22
HEIFER CALVES	40.68	9,437.04	41.56	293,131.85	9,515.03
BULL CALVES	8.32	1,047.13	7.45	293,131.85	1,059.87
BULLS	1.77	2,658.10	1.73	293,131.85	2,625.85
** SUBTOTAL **	287.84	435,003.33	295.36	293,131.85	441,459.76

TOTAL DAIRY INVESTMENT -----	2,135,509.34
CAPITAL LOANS	587,079.05
OPERATOR EQUITY	1,548,430.29
INVESTMENT PER COW	14,815.95
DEBT/CAPITAL RATIO	.28
CAPITAL TURNOVER (YR)	1.92

**HERD SIZE**

	Average	Median
NUMBER OF DAIRY COWS	143.26	120.96
NUMBER OF ANIMAL UNITS	226.78	185.53
DRY COWS (%)	19.87	
CALF CROP (%)	103.68	
PASTURE PER COW (AC.)	.29	

**CATTLE SALES & PURCHASES**

	NUMBER SOLD	SELLING PRICE	NUMBER PURCHASED	PURCHASE PRICE
COWS	41.84	1,249.24	1.88	2,297.08
BRED HEIFERS	1.93	1,706.78	.85	2,117.19
OPEN HEIFERS	1.53	1,606.14	.10	1,546.88
HEIFER CALVES	.59	316.97	.05	229.21
BULL CALVES	39.99	179.51	.00	.00
BULLS	1.07	1,805.85	.97	2,847.59
TOTAL VALUE		68,461.49		8,808.20

**Alberta Dairy Cost Study  
Business Analysis (2012 - 2016)  
Average 49 Participants  
Table 3 Labour and Management**

**LABOUR**

	HOURS	VALUE	HOURLY RATE
OPERATOR LABOUR	3,044.70	65,722.63	21.60
HIRED LABOUR	1,993.99	42,684.68	21.43
FAMILY UNPAID LABOUR	2,368.95	49,376.33	20.85
<b>TOTAL</b>	<b>7,407.65</b>	<b>157,783.64</b>	<b>21.32</b>
RETURN TO FAMILY LABOUR	12.03		
MAN EQUIVALENTS	2.96		
LABOUR HOURS PER COW	51.72		
YEARS FARMING	24.18		

**MILK PRODUCTION**

	HL.	% OF TOTAL	VALUE	AVERAGE PRICE / HL
MILK SALES	12,766.74	96.98	1,026,934.05	80.50
OTHER MILK PRODUCED	393.53	3.02		
<b>TOTAL</b>	<b>13,160.27</b>	<b>100.00</b>		

**AVERAGE COMPONENT PRICES (\$ / KG)**

BUTTERFAT TEST	3.99 KG / HL	11.53
PROTEIN	3.31 KG / HL	4.25
L.O.S.	5.72 KG / HL	3.63
MILK PRODUCTION PER COW	9,170.00 LITRES / YEAR	

**QUOTA INFORMATION**

TPQ HOLDINGS	131.48 KG / DAY
TPQ PRICE	37,603.17 \$ / KG / DAY
CREDIT PRICE	8.97 \$ / KG

**MANAGEMENT FACTORS**

COST PER HL	77.40
MILK/FEED (KG) RATIO	2.10 LITRES
MILK/LABOUR (HR) RATIO	177.34 LITRES
MILK/CAPITAL (\$) RATIO	.62 LITRES

**Alberta Dairy Cost Study  
Business Analysis (2012 - 2016)  
Average 49 Participants  
Table 4 Feed Report**

<u>CONCENTRATES</u>	— PURCHASED —		— HOMEGROWN—	
	QUANTITY (TONNES)	PRICE	QUANTITY (TONNES)	PRICE
OATS	2.69	132.61	2.96	184.39
BARLEY	72.26	196.88	112.01	200.77
WHEAT	.04	42.20	1.79	217.08
MIXED GRAIN	6.95	92.82	.00	.00
BREW GRAIN (DRY EQ. )	12.51	194.33		
BEET PULP	6.34	204.01		
OTHER PURCHASED	41.73	370.61		
DAIRY RATION	246.18	531.75		
CALF FEED	19.03	511.22		
MILK REPLACER	1.14	3,450.86		
SUPPLEMENT	86.72	574.71		
MOLASSES	4.10	296.74		
SALT	1.33	483.68		
MINERALS & VITAMINS	8.70	1,073.83		
SUBTOTAL -----	509.71	241,852.72	116.76	23,381.68
<u>ROUGHAGE</u>				
ALFALFA HAY	142.76	151.65	159.84	162.61
ALFALFA PELLETS	.00	.00		
STRAW FED	4.09	59.40	16.30	58.94
GREENFEED	.47	60.68	3.62	117.15
SILAGE/HAYLAGE (DRY EQ.)	203.04	125.31	526.66	145.30
SUBTOTAL -----	350.36	47,713.17	706.41	104,176.28
GRINDING & PROCESSING		2,731.97		
GRAND TOTAL FEED COSTS -----		292,297.86		127,557.96
BEDDING	153.79	61.82	77.39	55.09
AV. PRICE:	CONCENTRATE	423.80 \$/TONNE		
	ROUGHAGE	142.61 \$/TONNE		
FED PER COW:	CONCENTRATE	4.37 TONNES		
	ROUGHAGE	7.38 TONNES		
% HOME GROWN:	CONCENTRATE	18.73 %		
	ROUGHAGE	66.95 %		

## **APPENDIX E**

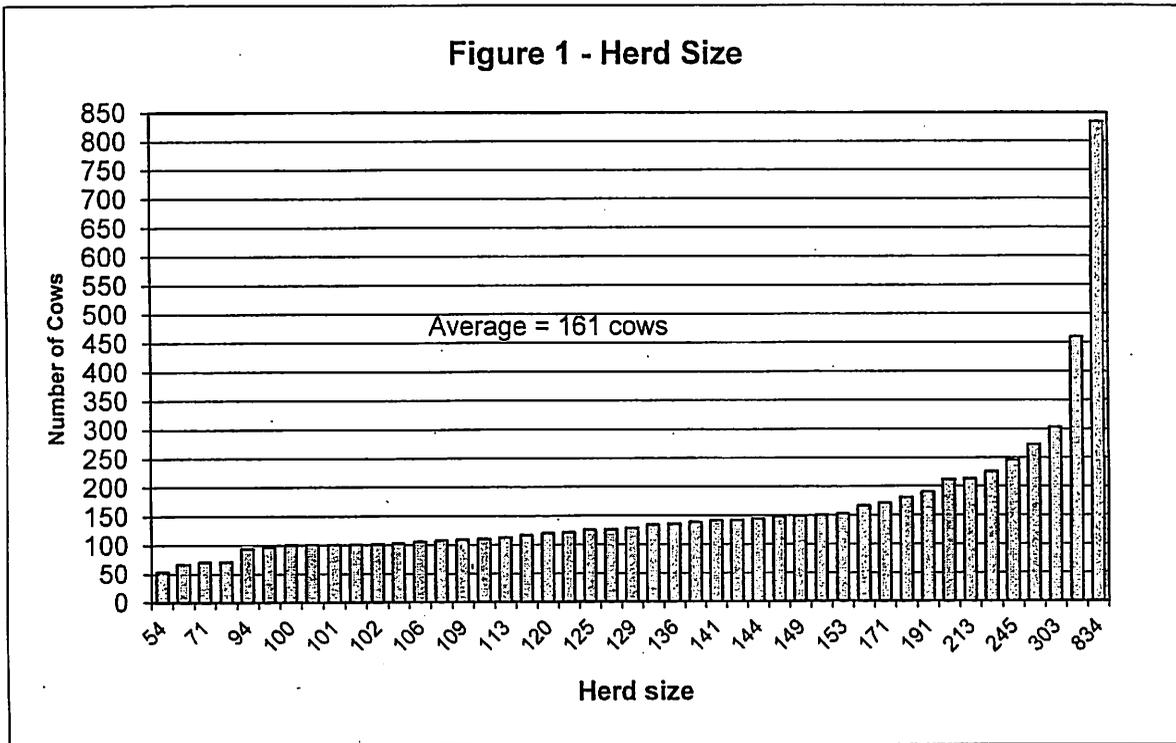
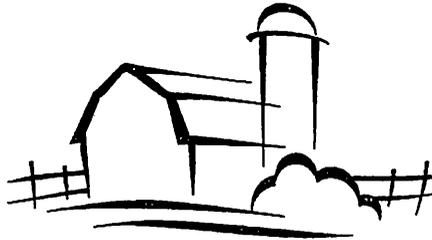
### **2016 Dairy Cost Study**

#### **Individual Results**

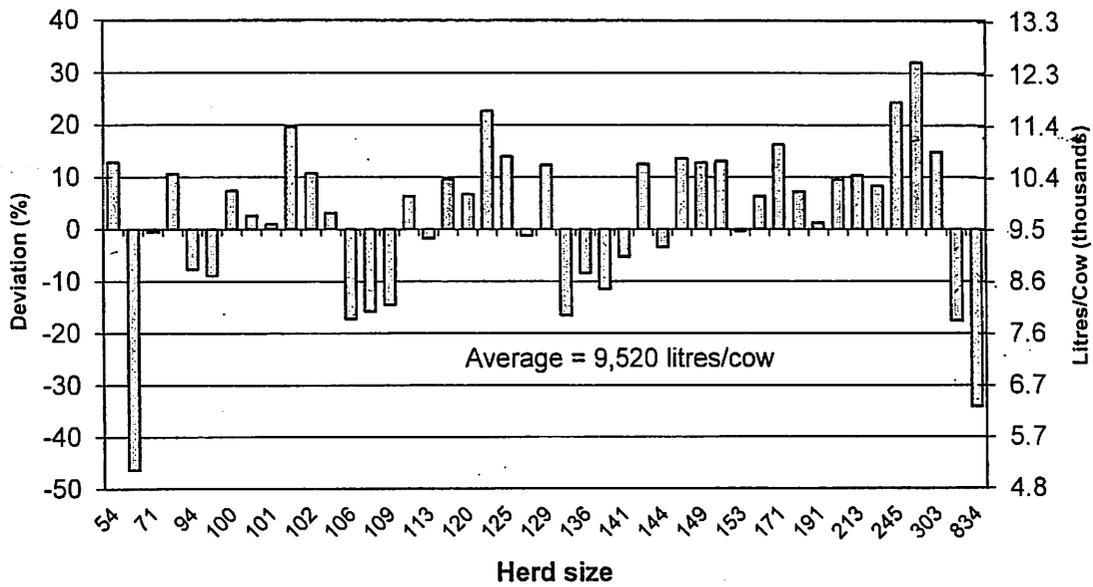
**(45 Participants)**

# Dairy Cost Study 2016

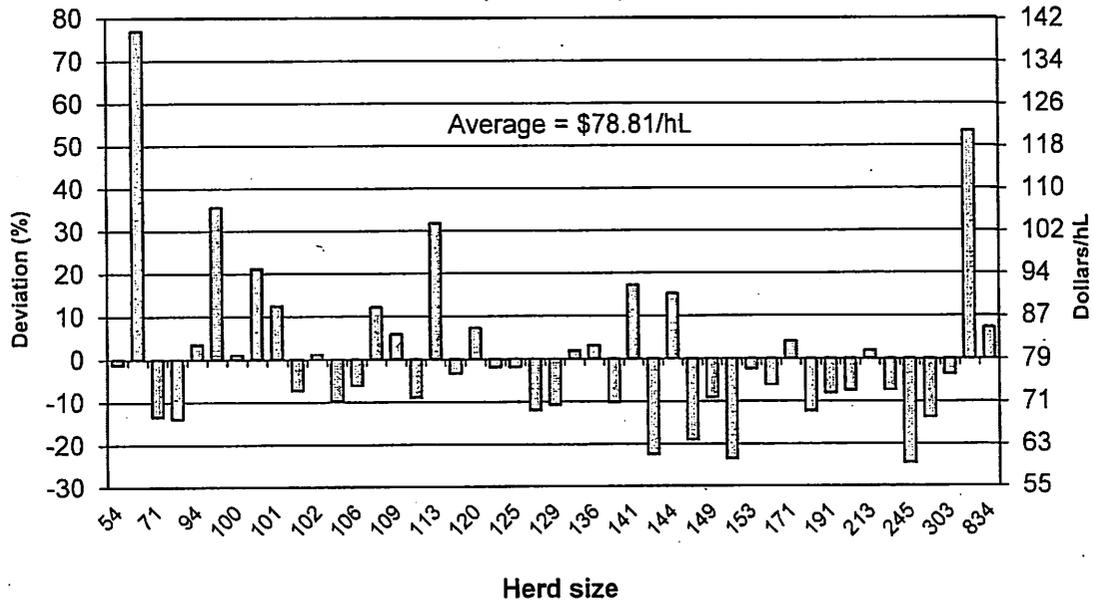
## Individual Results (45 Participants)



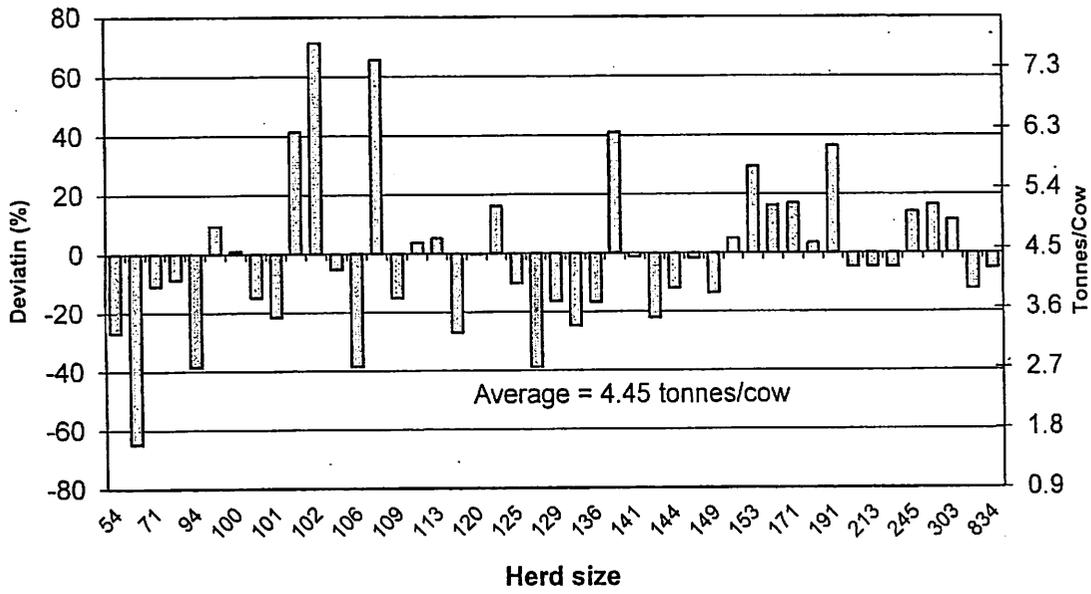
**Figure 2 - Milk Production  
(Litres/Cow)**



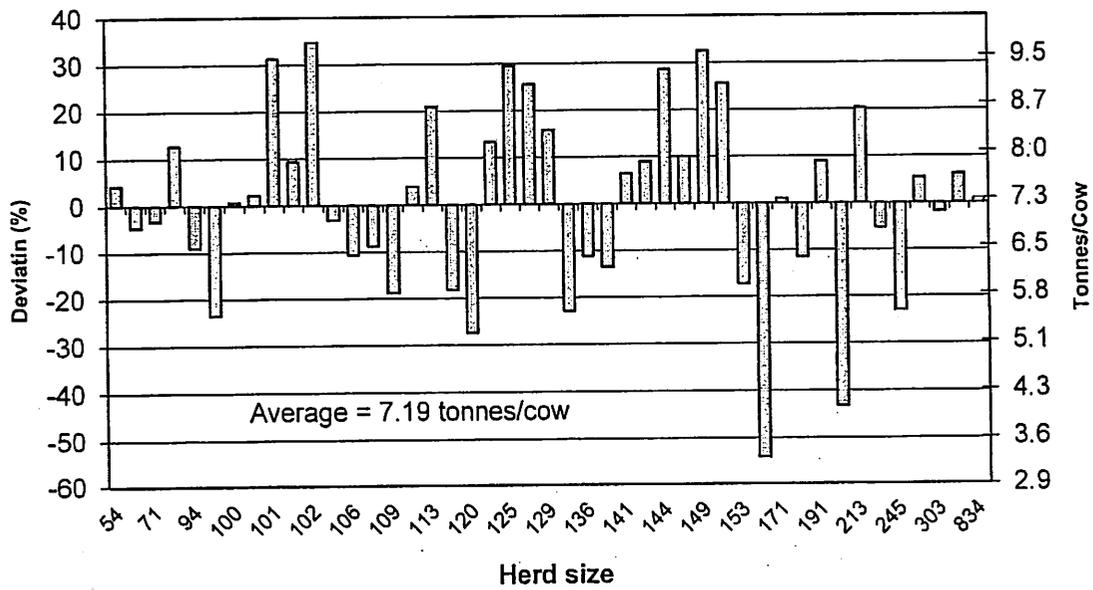
**Figure 3 - Cost of Production  
(Dollars/hL)**



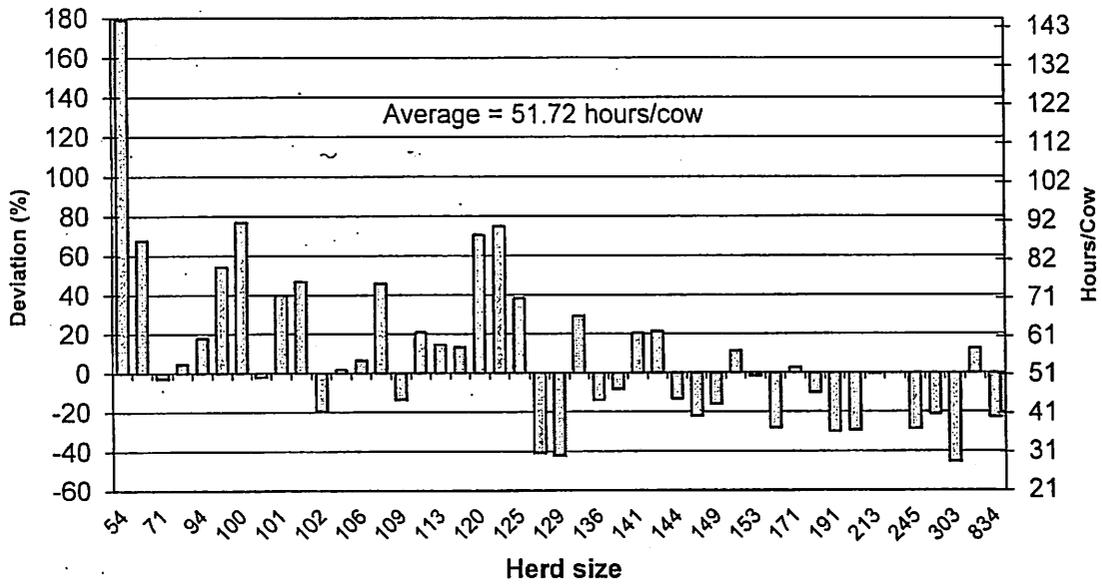
**Figure 4 - Concentrate Use  
(Tonnes/Cow)**



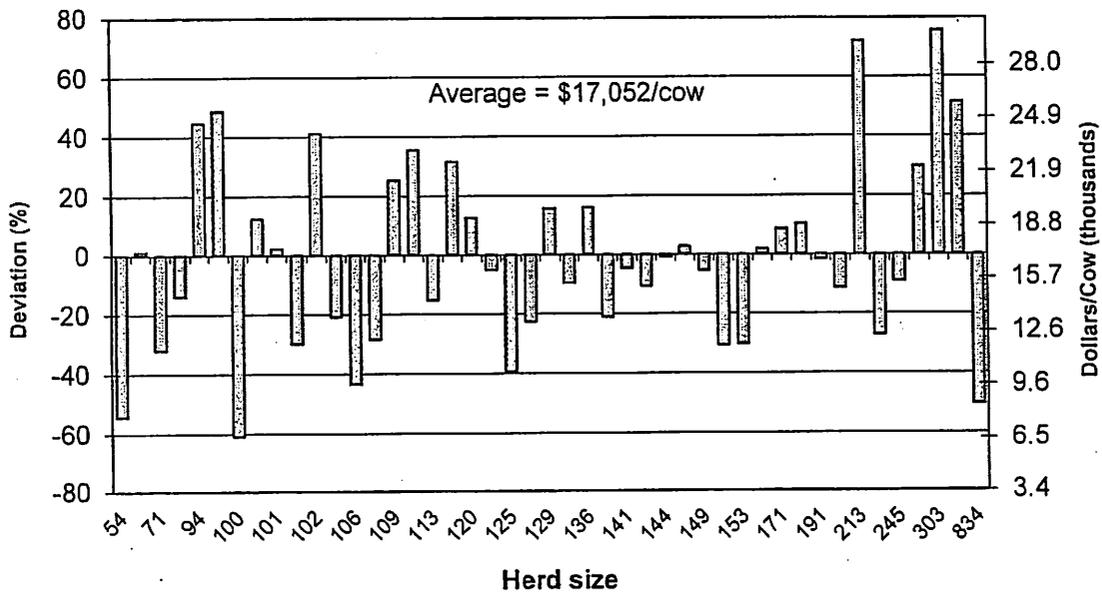
**Figure 5 - Roughage Use  
(Tonnes/Cow)**



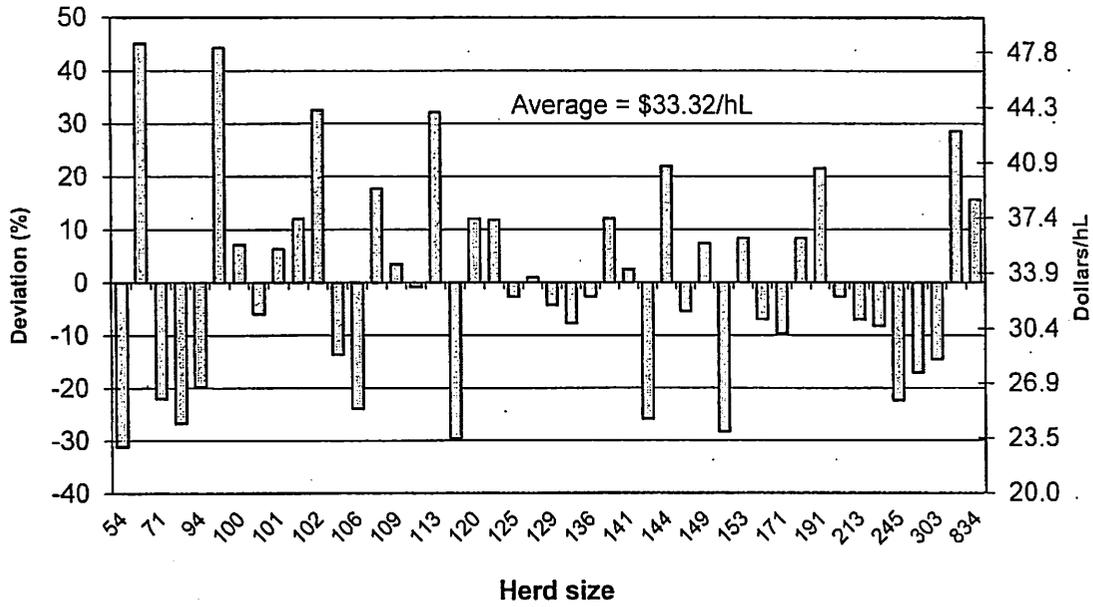
**Figure 6 - Labour Use  
(Hours/Cow)**



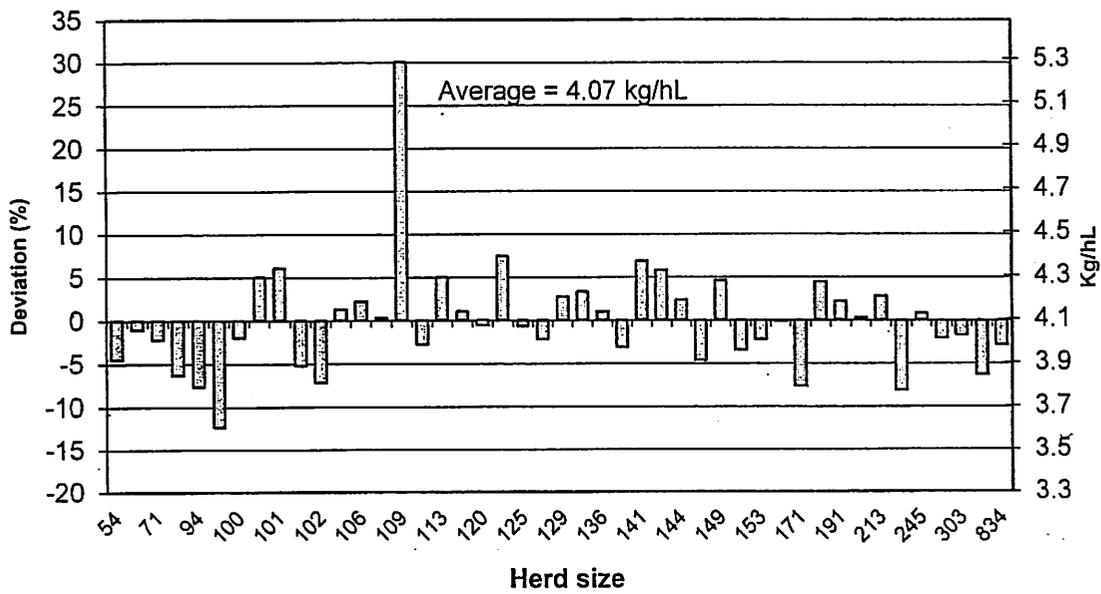
**Figure 7 - Investment  
(Dollars/Cow)**



**Figure 8 - Total Feed Cost  
(Dollars/hL)**



**Figure 9 - Butterfat Test  
(Kg/hL)**

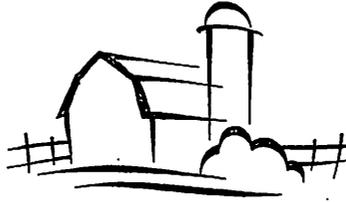


## **APPENDIX F**

### **2016 Dairy Cost Study Data Collection Forms**

**DAIRY COST STUDY, 2016**  
**Investments and Liabilities**

**Confidential**



**General Information**

Contact Name:	TPQ Holdings kg/day: (January 2016)	
E-Mail:	Number of Years in Dairy	
Fax:		

**Land Information**

	Total Acres	\$ per Acre	% to Dairy	% to Other Farm
Building Site				
Pasture				
Crop / Hay Land				

**Farm Loans**

		Balance: Jan. 1, 2016	Interest Rate	% to Dairy	% to Other Farm
1	Land:				
1					
2	Building:				
2					
3	Livestock:				
3					
4	Machinery:				
4					
5	Other:				

**Notice of Collection:**

The personal information, on this form, is being collected for the purpose of conducting research on the costs and returns of agricultural production in Alberta. The collection is under the authority of section 33 of the *Freedom of Information and Protection of Privacy (FOIP) Act* and is subject to the provisions of the Act. Only aggregated, non-identifying, information will be published and made available to the general public or organizations for research purposes.

If you have any questions about the collection or use of the information, please contact the Director, Economics S3ction, Alberta Agriculture and Rural Development, #303, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6 or phone: 780-422-3771

# DAIRY COST STUDY, 2016

Name: \_\_\_\_\_

## Supplies Inventory, Machinery and Buildings, January 1, 2016

Supplies Inventory		Value: Jan. 1, 2016	% to Dairy	% to Other Farm
1	Gas, Oil & Grease			
2	Vet., Semen, Etc			
3	Bedding			
4	Dairy Livestock Supplies (ie. pails)			
5	Rations & Supplements			
6	Other Supplies (ie. filters, soaps, etc.)			

Buildings Used for Dairy:		Purchased Price	Year Purchased	% to Dairy	% to Other Farm
1					
1					
1					
1					
1					
1					
1					
1					
1					

Examples: barns, machine shed, hay sheds, bunkers, shop, calf hutches, corrals

Tractors & Trucks Used for Dairy:					
2					
2					
2					
2					
2					
2					
2					
2					
2					

If you have any questions, please call Pauline Van Biert at 780-415-2153, toll free by first dialing 310-0000



see over

**Dairy Equipment:**

3					
3					
3					
3					
3					
3					
3					
3					
3					
3					

Examples: bulk tank, pipeline, milk meters, washer, vacuum pump, generator, buckets

<b>Other Equipment Used for Dairy:</b>	<b>Purchased Price</b>	<b>Year Purchased</b>	<b>% to Dairy</b>	<b>% to Other Farm</b>
4				
4				
4				
4				
4				
4				
4				
4				
4				
4				
4				
4				
4				
4				
4				
4				

Examples: manure spreader, barn cleaner, manure pump, cattle trailer, quad, bale feeders, silo unloader, scraper, feed mixers, sawdust blowers, semen tank, fencers, fans, crowd gate, small tools (table saw, drill press, welder, power tools), fuel tanks, wheel barrows, computer feeding system, home computer

# DAIRY COST STUDY, 2016

## Monthly Reporting Sheet

Confidential



Name: \_\_\_\_\_

Month: \_\_\_\_\_

If you have any questions, please call Pauline Van Biert at 780-415-2153, toll free by first dialing 310-0000

Dairy Herd	Beginning No.	Purchases		No. Born	Died or Trans/Out	Sales		End No.
		No.	Total Value			No.	Total Value	
1. Milking Cows								
2. Dry Cows								
3. Bred Heifers								
4. Open Heifers								
5. Heifer Calves								
6. Bull Calves*								
7. Herd Bulls								

\*less than 6 months

Capital Purchases			Total Value (\$)	% to Dairy	% to Other Farm
Specify					
1. Equipment	Purchases:				
2.	Sales:				
3. Tractor/Truck	Purchases:				
4.	Sales:				
5. Buildings	Purchases/Const:				
6.	Sales:				
13. TPQ	Purchased:	(kgs/day)			
14.	Sold:	(kgs/day)			
15. Credit Transfers		(\$/kg)			

### Milk Produced / Sold \*

	Litres	Total \$ Value
2. Milk Fed To Livestock		
3. Milk Used in the Home		
4. Unuseable Milk (dumped)		
5. Miscellaneous Dairy Income (i.e. colostrum sales, BSE program pmts.)		

\* All Plant Sales will be recorded from Milk Statement provided by Alberta Milk

FEED Used by Dairy Herd	Office Use	Unit Type*	Bale Weight	Amount Used	Unit Price (if purchased)	cd		Office Use	Unit Type *	Amount Used	Unit Price
1. Barley						21	Dairy Ration				
2. Oats						22	Supplement				
3. Wheat						23	Brew Grain				
5. Hay (homegrown)						24	Beet Pulp				
6. Hay (purchased)						25	Alfalfa Pellets				
7. Silage						26	Calf Feed				
8. Haylage						27	Milk Replacer				
9. Greenfeed						28	Salt				
10. Straw - Fed						29	Min. & Vit.				
11. Straw-Bedding											
11. Sawdust											
12. Other:						31	Grinding & Processing				

\* T = Imperial Ton, t = Metric tonne, bu = bushels, kg = kilograms, ba = bales (please provide bale weight), bags (20 or 25 kg)



### LABOUR for Dairy Activities \*

LABOUR for Dairy Activities *			Total Hours
1. Operator			
2. Wife, Partner, 2nd Operator			
3. Family Labour	16 yrs and Over		
4.	Under 16		Wages & Board
5. Hired Labour	1		
5.	2		

\* do not include hours doing fieldwork

### EXPENSES

EXPENSES	Total Farm (\$)	% to Dairy	% Other Farm
1. Veterinary and Medicine			
1. Breeding			
2. Livestock & Barn Supplies			
3. Building & Fence Repair			
4. Machinery & Equipment Repair			
5. Fuel, Oil, Lube (for equipment, not heating)			
13. Natural Gas			
14. Electricity			
15. Other Utilities (phone, propane, heating oil, etc.)			
7. Insurance, Licences & Taxes			
8. Cash Rental (pasture, equipment, leases, etc.)			
9. Operating Loan Interest			
10. Custom Work (i.e. manure hauling, parlour cleaning)			
11. Silage Bags (hay tarps, plastic, etc.)			
12. Misc. (legal, acct, D.H.I., hooftrimming, etc)			

Confidential when Completed