

# Economics of Milk Production in Alberta, 2017

## The Dairy Cost Study



An annual account of the costs and returns of milk production in Alberta

Alberta Agriculture and Forestry, Government of Alberta

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# Acknowledgments

We acknowledge and appreciate the participation of 39 milk producers in Alberta who provided detailed information for the 2017 Dairy Cost Study. Their participation was supported and encouraged by Alberta Milk which provided a financial honorarium to participants. The Economics Section, as well as fellow producers, are appreciative of the time and effort the participants gave in providing timely and accurate information. Without their participation, publication of this report would not have been possible.

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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 that can be directly compared to the provincial profiles (e.g. average, top-third, and bottom-third). Other dairy producers in the province can also compare their own records and analysis with the provincial profiles. In addition, the Dairy Cost Study provides vital information to other dairy industry partners, such as: financial institutions, market analysts and policy analysts.

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 personalized business analysis for use in making profitable 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 survey forms regarding their dairy production activities - dairy herd inventory, capital purchases, milk sales and farm use, feed use and purchase costs, labour hours and wages (if applicable) costs, and other expenses related to the dairy enterprise – as well as an annual form on their dairy investments (See Appendix F.) From this database, weighted sample averages are calculated representing benchmarks for all dairy producers in the province. As well, study participants receive a confidential economic analysis of their farm including graphs, charts and a 5-year average with a 5-year historical breakdown that 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 2017, approximately 42 per cent 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 what was then called the Canadian Quality Milk Program (currently called the Food Safety Module of ProAction).

## The Survey Group

Thirty-nine dairy producers across the province submitted monthly business information for the 2017 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 24 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 39 dairy cost study participants.

**Table 1: 2017 Sample Characteristics**

Years in Dairy	Total Sample %	Indebtedness		Herd Size (# of cows)	
		<30%	≥30%	<75	≥75
<10	10	2	2	1	3
≥10	90	23	12	3	32
<b>Total (%)</b>	<b>100</b>	<b>64</b>	<b>36</b>	<b>10</b>	<b>90</b>

## Study Methodology

### Enterprise Identification

There are several different approaches for calculating the farm cost of producing 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 home-grown 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.

### 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.

### 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.

## **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.

## **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 number of operator's labour hours' by 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.

## **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 per cent return to equity can be compared with the returns from alternative investment opportunities such as Canada Savings Bonds or term deposits.

## 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 per cent or \$25.85 per hectolitre (hL) lower than the bottom 1/3, and 14 per cent lower than the provincial average. Differences include:

- Total feed cost was 23 per cent lower in the top 1/3 group. This can be a result of the location of the farms within this group as in 2017 the purchase feed values were higher in the northern part of the province compared to the south.
- Labour was lower by 31 per cent in the top 1/3 group.
- Capital costs were higher by 36.5 per cent in the higher cost group. This could be driven by that group having higher investment levels and subsequently depreciation values are higher.

Table 3 compares the average costs and returns for 2016 and 2017. In 2017 the total cost of producing a hectolitre of milk was \$75.32. This is a decrease of \$3.65 per hectolitre or almost 5 per cent from 2016.

- The main driver behind the decrease was in total feed costs. Figure 22 highlights the decrease in barley grain price by 9 per cent from \$187.61/tonne in 2016 to \$169.99/tonne in 2017. Hay prices also dropped by almost 20 per cent from average \$199.57/tonne in 2016 to \$166.37 in 2017.

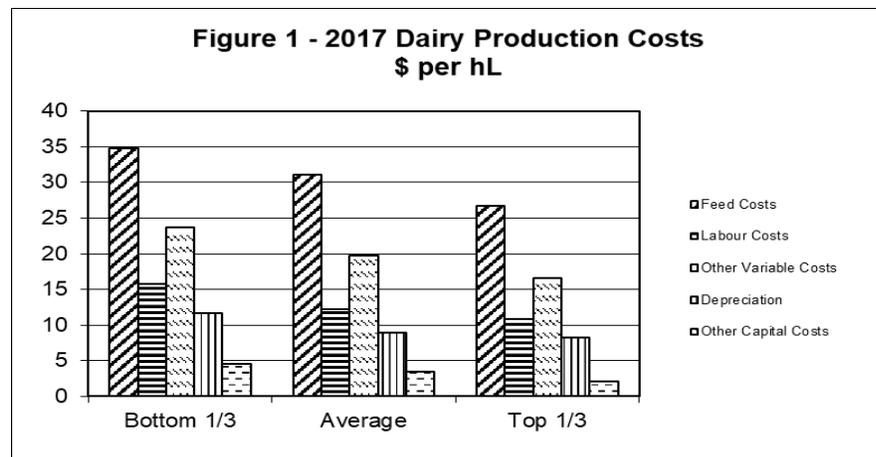
Demand for milk remained at an unprecedented high through 2017, seeming to reach a plateau later in the year. There was an increase in total milk sales. Farmers are milking more cows to increase milk production as average milk production per cow remained fairly stable. With consumer demand for butter and cheese came the need for a higher butterfat component. The average butterfat test in 2017 was 4.15 kg/hL compared to 4.07 kg/hL in 2016.

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

**Table 2: Dairy Enterprise Costs and Returns - \$ Per hL Sold**

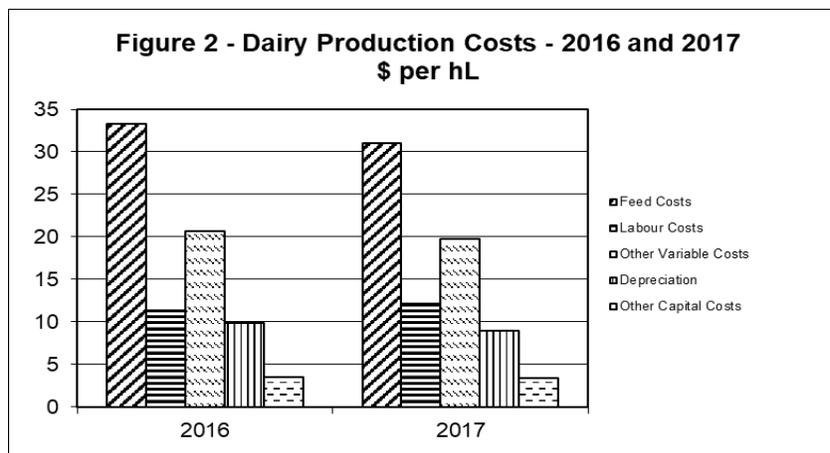
**Bottom 1/3 (Highest Cost Producers), Average Cost, Top 1/3 (Lowest Cost Producers)**

	Bottom 1/3	Average	Top 1/3
<b>Gross Income</b>	<b>87.98</b>	<b>86.80</b>	<b>86.32</b>
Feed Cost	34.78	31.01	26.75
Grain	3.23	4.22	4.55
Complete Feed	11.51	11.54	8.29
Roughage	12.81	10.22	10.06
Labour Costs	15.81	12.19	10.90
Other Variable Costs	23.63	19.72	16.65
Depreciation	11.64	8.97	8.20
Other Capital Costs	4.62	3.42	2.12
<b>Total Production Costs</b>	<b>90.49</b>	<b>75.32</b>	<b>64.61</b>
Total Cash Costs	66.11	57.85	47.62
<b>Gross Margin</b>	<b>21.88</b>	<b>28.95</b>	<b>38.70</b>
<b>Contribution Margin</b>	<b>13.77</b>	<b>23.88</b>	<b>32.02</b>
<b>Return to Investment</b>	<b>(0.24)</b>	<b>12.90</b>	<b>22.37</b>
<b>Return to Equity</b>	<b>(2.50)</b>	<b>11.49</b>	<b>21.71</b>
<b>Return to Investment (%)</b>	<b>0.6</b>	<b>7.4</b>	<b>13.8</b>
<b>Return to Equity (%)</b>	<b>(1.02)</b>	<b>8.8</b>	<b>16.0</b>



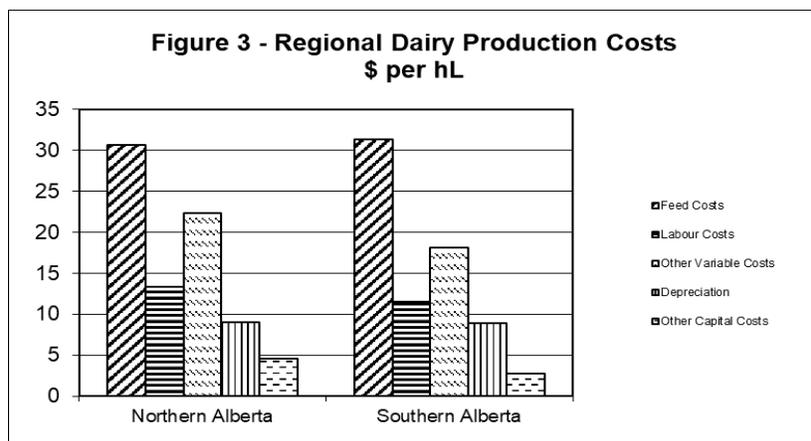
**Table 3: Dairy Enterprise Costs and Returns - \$ Per hL Sold  
2 Year Comparison - 2016 and 2017**

	2016 (45 producers)	2017 (39 producers)
Milk Sales	79.13	79.57
<b>Gross Income</b>	<b>85.45</b>	<b>86.80</b>
Feed Costs	33.43	31.01
Grain	5.02	4.22
Complete Feed	10.43	11.54
Roughage	13.07	10.22
Labour Costs	11.41	12.19
Other Variable Costs	20.68	19.72
Depreciation	9.86	8.97
Other Capital Costs	3.59	3.42
<b>Total Production Costs</b>	<b>78.97</b>	<b>75.32</b>
Total Cash Costs	61.10	57.85
<b>Gross Margin</b>	<b>24.35</b>	<b>28.95</b>
<b>Contribution Margin</b>	<b>19.92</b>	<b>23.88</b>
<b>Return to Investment</b>	<b>8.28</b>	<b>12.90</b>
<b>Return to Equity</b>	<b>6.47</b>	<b>11.49</b>
<b>Return to Investment (%)</b>	<b>4.5</b>	<b>7.4</b>
<b>Return to Equity (%)</b>	<b>5.0</b>	<b>8.8</b>



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

	North (15 producers)	South (24 producers)
Milk Sales	79.52	79.60
<b>Gross Income</b>	<b>89.61</b>	<b>85.11</b>
Feed Costs	30.59	31.27
Grain	5.66	3.32
Complete Feed	9.77	12.63
Roughage	9.96	10.39
Labour Cost	13.28	11.51
Other Variable Costs	22.36	18.08
Depreciation	9.02	8.94
Other Capital Costs	4.59	2.70
<b>Total Production Costs</b>	<b>79.83</b>	<b>72.51</b>
Total Cash Costs	63.89	54.10
<b>Gross Margin</b>	<b>25.73</b>	31.00
<b>Contribution Margin</b>	<b>23.39</b>	<b>24.24</b>
<b>Return to Investment</b>	<b>11.63</b>	<b>13.74</b>
<b>Return to Equity</b>	<b>9.78</b>	<b>12.59</b>
<b>Return to Investment (%)</b>	<b>6.4</b>	<b>8.0</b>
<b>Return to Equity (%)</b>	<b>8.05</b>	<b>9.3</b>



# Definitions

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 (examples: colostrum sales, BSE test cow payments, environmental compliance and a milk quality bonus),
- 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, licenses 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 (also called net farm income).

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

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). Fluid quota and Industrial quota (MSQ) were merged into total production quota.

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

Herd size ranged from 59 to 737 milking cows. For this analysis, the sample group was split into the following three size classes:

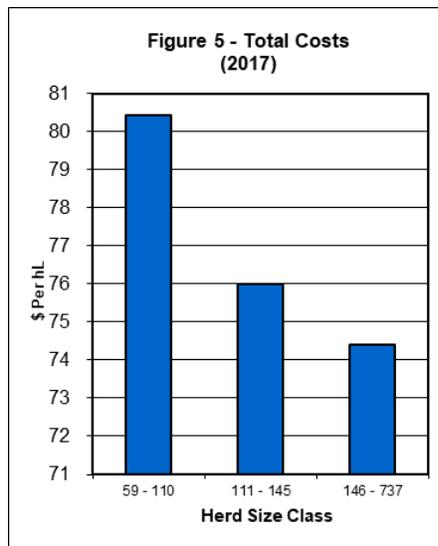
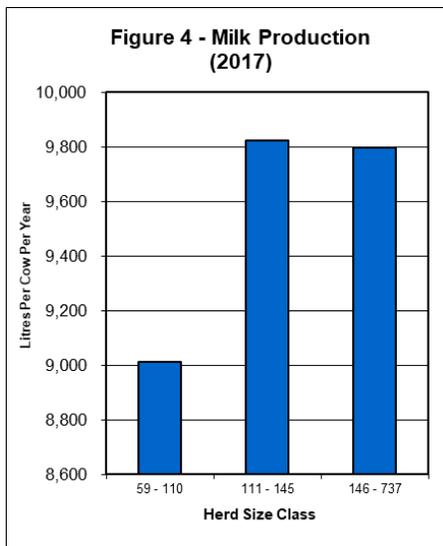
Bottom 1/3: 59 – 110

Middle 1/3: 111 – 145

Top 1/3: 146 - 737

Table 5 - Dairy Enterprise Characteristics by Herd Size Class			
	Bottom 1/3	Middle 1/3	Top 1/3
	59 - 110	111 - 145	146 - 737
Years in Dairy	23.18	20.85	30.21
<b>Milk Production (litres/yr)</b>	<b>9,013.91</b>	<b>9,825.00</b>	<b>9,798.79</b>
Home Grown Feed (%)	63.7	69.8	72.2
Butterfat Test (kg/hL)	4.13	4.06	4.11
Gross Income (\$/hL)	87.59	85.55	87.27
<b>Total Costs (\$/hL)</b>	<b>80.44</b>	<b>76.01</b>	<b>74.40</b>
Feed Costs (\$/hL)	28.39	32.54	32.54
Labour (hrs/cow)	68.42	59.13	42.62
Investment (\$/cow)	14,604.95	16,680.25	17,817.69
Return to Equity (%)	9.5	6.9	9.7
Return to Investment (%)	6.9	6.5	7.2
Debt/Capital Ratio	0.25	0.18	0.26

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

Milk production ranged between 5,312 and 11,951 litres per cow per year. For this analysis, the sample group was split into the following three classes:

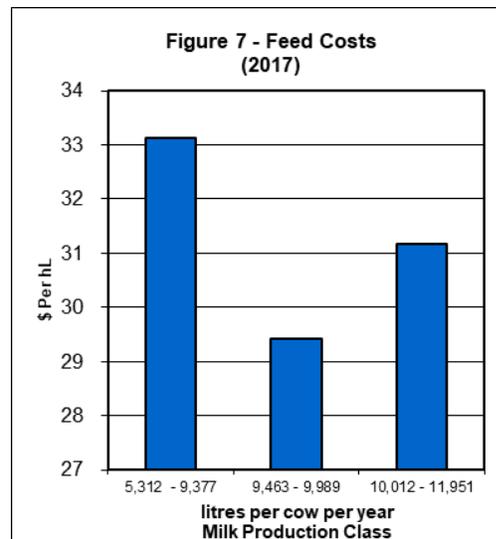
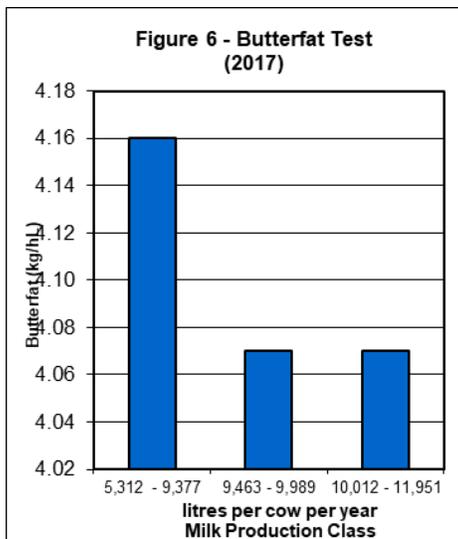
Bottom 1/3: 5,312 – 9,377

Middle 1/3: 9,463 – 9,989

Top 1/3: 10,012 – 11,951

Table 6 - Dairy Enterprise by Milk Production Class			
	Bottom 1/3	Middle 1/3	Top 1/3
	5,312 - 9,377	9,463 - 9,989	10,012 - 11,951
Years in Dairy	27.00	22.44	24.67
Herd Size	179	123	162
Home Grown Feed (%)	84.4	54.4	68.2
<b>Butterfat Test (kg/hL)</b>	<b>4.16</b>	<b>4.07</b>	<b>4.07</b>
Gross Income (\$/hL)	88.53	86.12	85.71
Total Costs (\$/hL)	83.07	75.48	72.34
<b>Feed Costs (\$/hL)</b>	<b>33.13</b>	<b>29.42</b>	<b>31.16</b>
Labour (hrs/cow)	53.94	57.70	58.65
Investment (\$/cow)	15,945.82	15,888.96	17,328.99
Return to Equity (%)	6.1	9.0	10.8
Return to Investment (%)	4.4	7.1	9.0
Debt/Capital Ratio	0.24	0.28	0.15

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

Gross income ranged between \$79.04 and \$105.43 per hectoliter sold. For this analysis, the sample group was split into the following three classes:

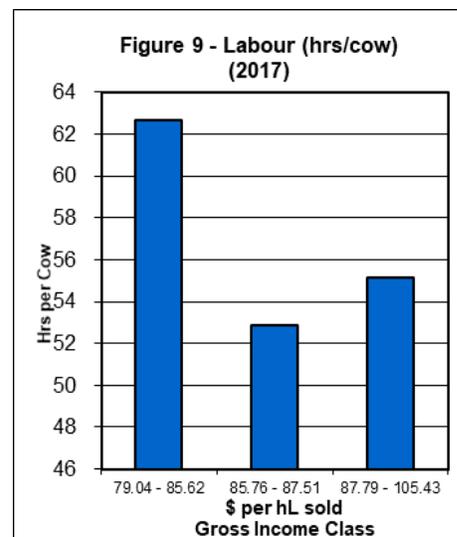
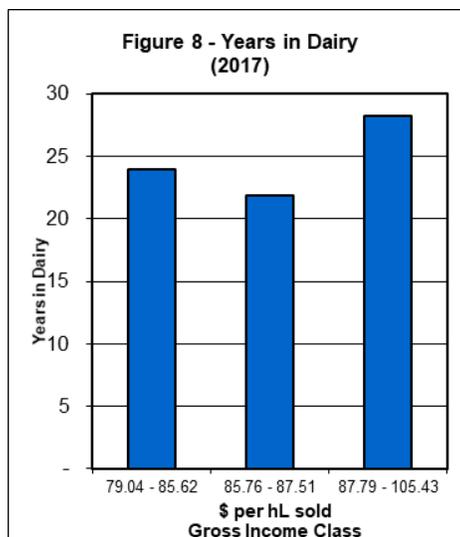
Bottom 1/3: 79.04 – 85.62

Middle 1/3: 85.76 – 87.51

Top 1/3: 87.79 – 105.43

	Bottom 1/3 79.04 - 85.62	Middle 1/3 85.76 - 87.51	Top 1/3 87.79 - 105.43
<b>Years in Dairy</b>	<b>24.00</b>	<b>21.90</b>	<b>28.25</b>
Herd Size	122	147	193
Milk Production (litres/yr)	9,808.70	9,542.87	9,307.83
Home Grown Feed (%)	62.1	80.3	62.6
Butterfat Test (kg/hL)	4.01	4.03	4.26
Total Costs (\$/hL)	74.40	74.75	81.79
Feed Costs(\$/hL)	30.48	30.31	32.86
<b>Labour (hrs/cow)</b>	<b>62.67</b>	<b>52.87</b>	<b>55.12</b>
Investment (\$/cow)	17,147.45	14,876.06	17,218.18
Return to Equity (%)	4.8	11.2	9.7
Return to Investment (%)	5.2	8.3	6.9
Debt/Capital Ratio	0.13	0.32	0.22

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

Total cost ranged between \$61.30 and \$135.5 per hectoliter sold. For this analysis, the sample group was split into the following three classes:

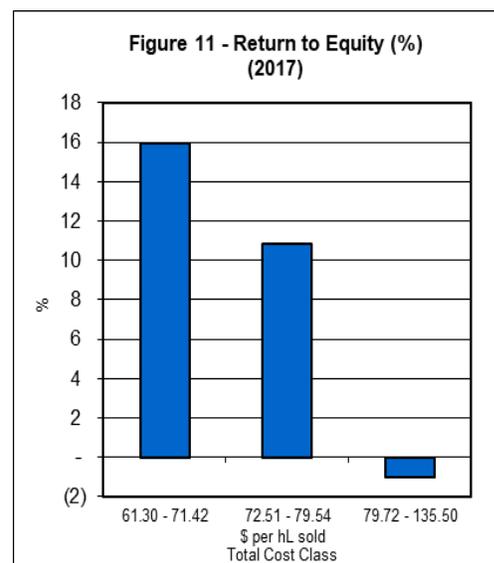
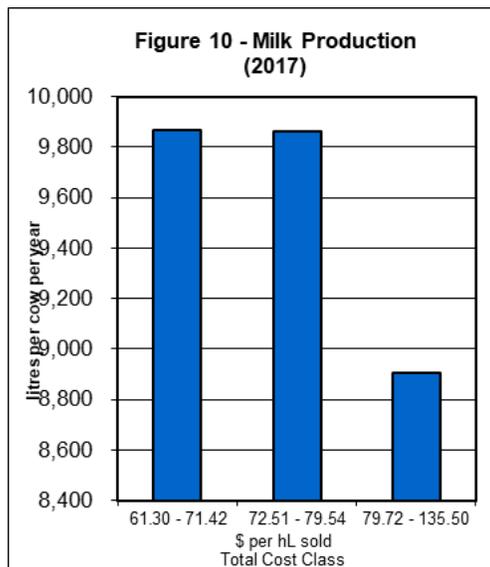
Top 1/3: 61.30 – 71.42

Middle 1/3: 72.51 – 79.54

Bottom 1/3: 79.72 – 135.50

	Top 1/3	Middle 1/3	Bottom 1/3
	61.30 - 71.42	72.51 - 79.54	79.72 - 135.50
Years in Dairy	22.27	28.09	23.32
Herd Size	148	138	177
<b>Milk Production (litres/yr)</b>	<b>9,866.10</b>	<b>9,862.94</b>	<b>8,905.74</b>
Home Grown Feed (%)	75.9	68.1	61.9
Butterfat Test (kg/hL)	4.14	4.01	4.15
Gross Income (\$/hL)	86.32	86.06	87.98
Feed Costs (\$/hL)	26.75	31.99	34.78
Labour (hrs/cow)	48.34	61.77	59.87
Investment (\$/cow)	15,991.56	14,119.22	19,189.13
<b>Return to Equity (%)</b>	<b>16.0</b>	<b>10.8</b>	<b>(1.0)</b>
Return to Investment (%)	13.3	7.6	(0.4)
Debt/Capital Ratio	0.14	0.22	0.32

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).



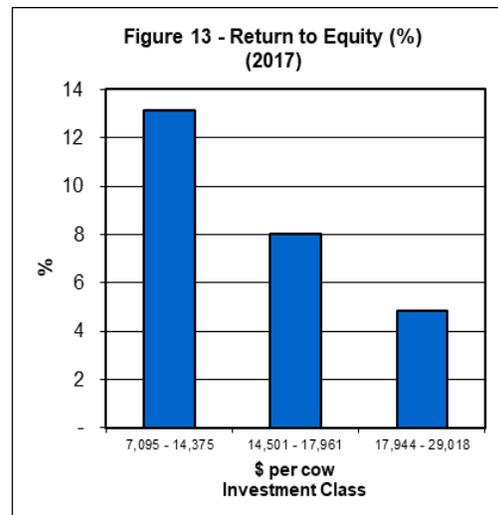
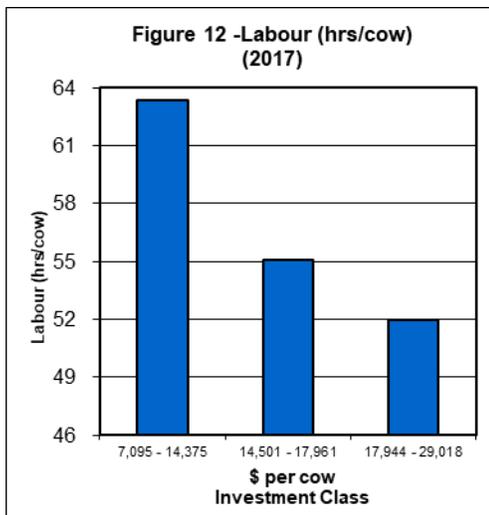
## Dairy Characteristics by Investment Class

Investment per cow ranged between \$7,095 and \$29,018. For this analysis, the sample group was split into the following three classes:

Bottom 1/3: 7,095 – 14,375      Middle 1/3: 14,501 – 17,961      Top 1/3: 17,944 – 29,018

	Bottom 1/3	Middle 1/3	Top 1/3
	7,095 - 14,375	14,501 - 17,961	17,944 - 29,018
Years in Dairy	25.98	22.96	25.13
Herd Size	165	150	147
Milk Production (litres/yr)	9,380.73	9,721.17	9,543.78
Home Grown Feed (%)	63.5	67.7	74.7
Butterfat Test (kg/hL)	3.97	4.17	4.15
Gross Income (\$/hL)	86.79	86.58	86.96
Total Costs (\$/hL)	74.57	73.12	83.38
Feed Costs (\$/hL)	31.04	28.87	33.84
<b>Labour (hrs/cow)</b>	<b>63.39</b>	<b>55.11</b>	<b>51.99</b>
<b>Return to Equity (%)</b>	<b>13.1</b>	<b>8.0</b>	<b>4.8</b>
Return to Investment (%)	9.9	8.1	2.4
Debt/Capital Ratio	0.19	0.21	0.28

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

Labour (hrs/cow) ranged between 27 and 123. For this analysis, the sample group was split into the following three classes:

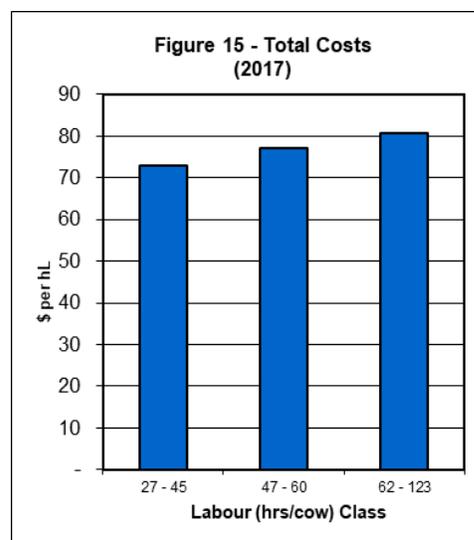
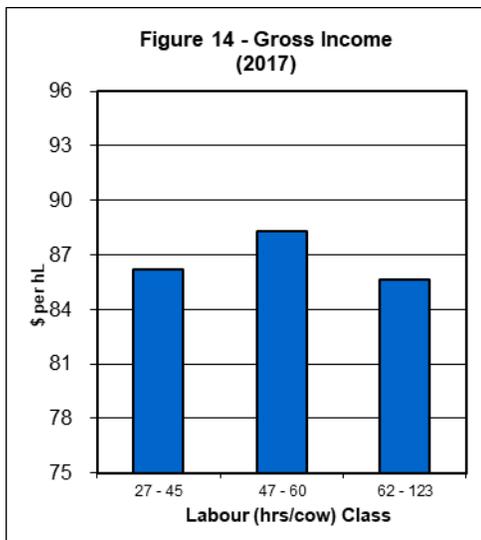
Bottom 1/3: 27 – 45

Middle 1/3: 45 – 60

Top 1/3: 62 – 123

	Bottom 1/3	Middle 1/3	Top 1/3
	27 - 45	47 - 60	62 - 123
Years in Dairy	30.17	22.37	21.58
Herd Size	221	133	109
Milk Production (litres/yr)	9,842.12	9,352.59	9,479.34
Home Grown Feed (%)	76.6	62.2	67.6
Butterfat Test (kg/hL)	4.06	4.17	4.06
<b>Gross Income (\$/hL)</b>	<b>86.23</b>	<b>88.33</b>	<b>85.64</b>
<b>Total Costs (\$/hL)</b>	<b>72.87</b>	<b>77.16</b>	<b>80.73</b>
Feed Costs (\$/hL)	33.59	29.85	30.23
Investment (\$/cow)	18,716.88	14,757.67	15,776.25
Return to Equity (%)	9.6	10.4	5.9
Return to Investment (%)	7.3	7.7	5.5
Debt/Capital Ratio	0.23	0.33	0.11

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

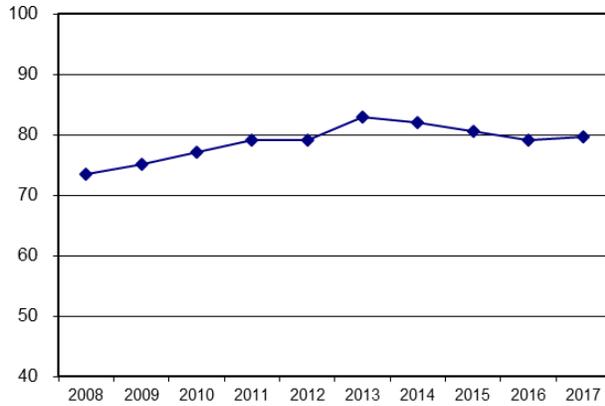
Table 11 provides a further examination of regional differences from a management perspective.

**Table 11: Detailed Management Factors, Northern and Southern Alberta, 2017**

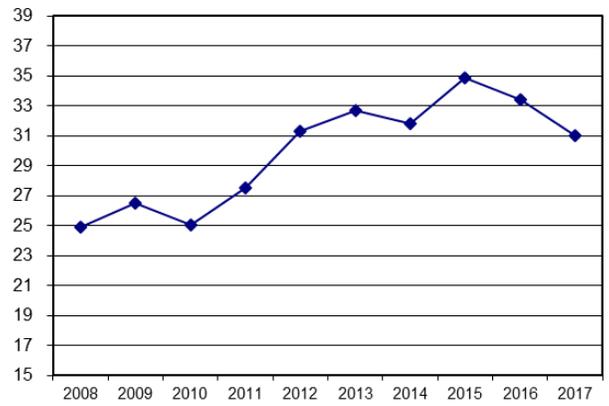
	Northern Alberta	Southern Alberta
Herd Size	187	152
Milk Production (litres/cow/year)	8,393.25	10,317.12
Feed Conversion (litres/kg concentrates)	1.93	2.29
Labour Productivity (litres/hr)	170.14	190.33
Labour Hours/Cow (hrs)	49.33	54.21
Investment/Cow (\$/cow)	14,745.36	17,127.65
Milk Production/\$ Invest (litres/\$)	0.57	0.60
Feed Costs (\$/cow)	2,483.53	3,150.57
Purchased Barley (\$/tonne)	170.36	155.68
Cost of Purchased Hay (\$/tonne)	173.84	164.54
Home Grown Roughage (%)	61.1	75.6
Butterfat Test (kg/hL)	4.17	4.13
Protein (kg/hL)	3.38	3.32
LOS (kg/hL)	5.73	5.73
Total Costs (\$/hL)	79.83	72.51
Contribution Margin (\$/hL)	23.39	24.24
Return to Investment (%)	6.4	8.1
Return to Equity (\$/hL)	9.78	12.59
Return to Equity (%)	8.1	9.3
Debt to Capital Ratio	0.33	0.21

# Historical Economic Trends

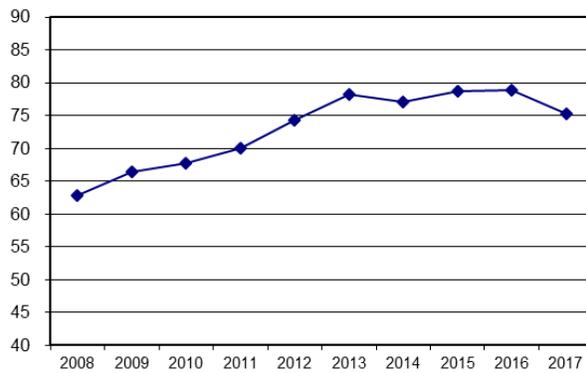
**Figure 16 - Average Milk Price (\$ per hL)**



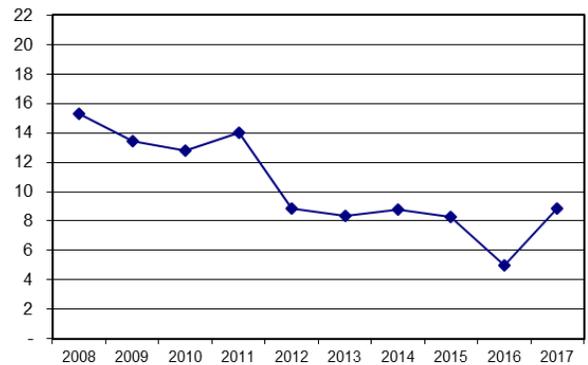
**Figure 17 - Feed Cost (\$ per hL)**



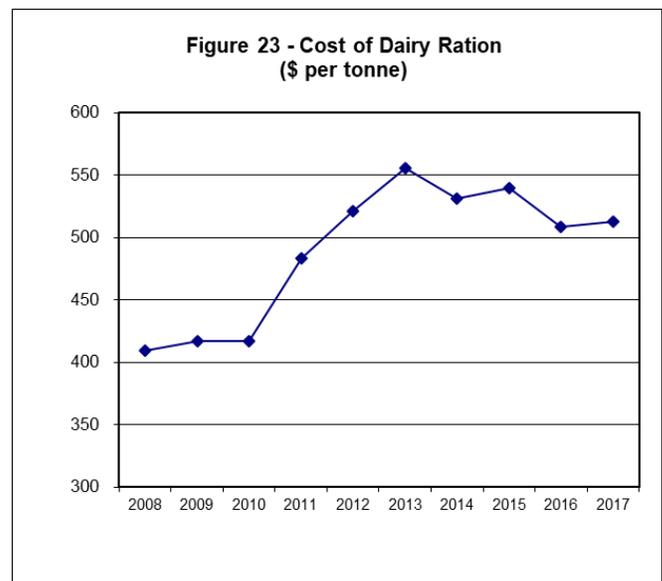
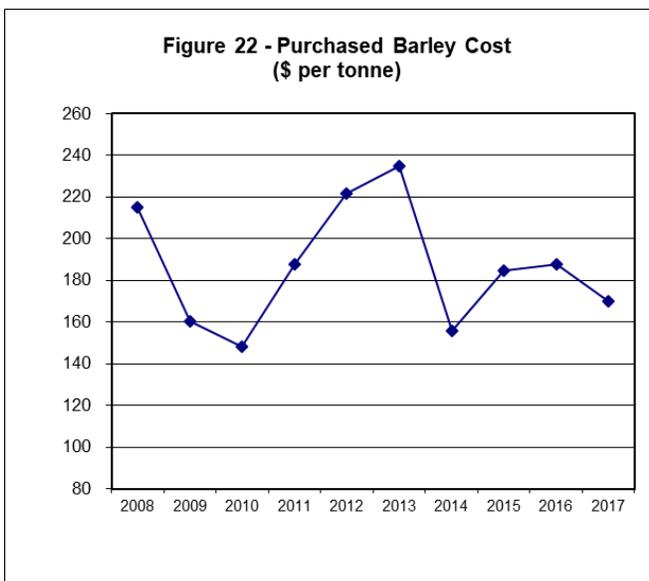
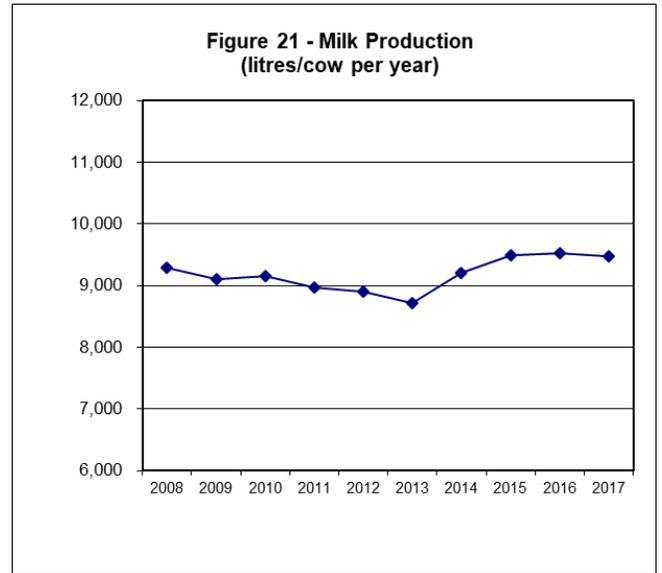
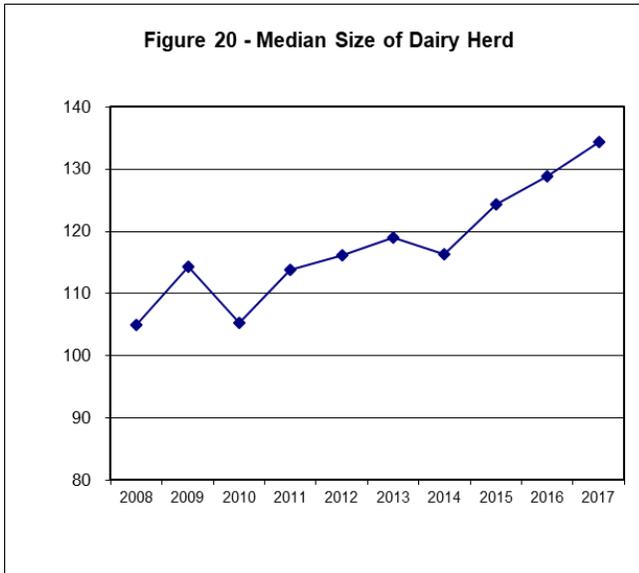
**Figure 18 - Total Cost (\$ per hL)**



**Figure 19 - Return to Equity (%)**



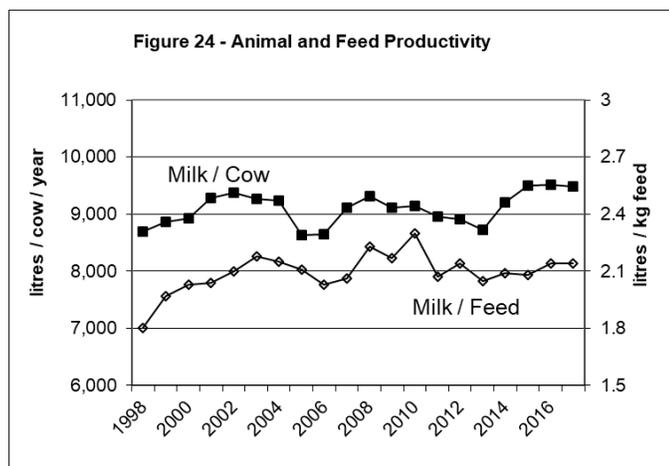
# Historical Economic Trends



# 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. Milk production per cow has been on a steady upward path since 2013. After reaching a ten-year high point in 2016 with an average of 9,521 litres/cow/year, production has dropped only marginally in 2017 to an average of 9,480 litres/cow/year. Increased consumer demand for dairy products began in 2014 and continued to increase through 2017.



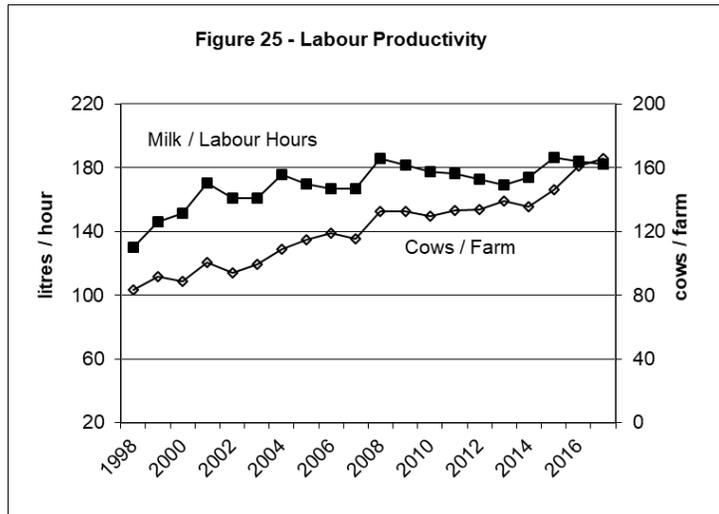
Consumption of fluid milk is on a slight decline, however there is an increase overall for the higher fat products of butter and cheese. In 2017, dairy farmers were issued several quota increases throughout the year and a total of 25 incentive credits<sup>1</sup> to encourage and enable increased milk production.

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. After a spike in 2010, feed conversion rates have levelled off and remained fairly flat at 2.1 litres of milk produced per kilogram of feed concentrates. This may be due to producers concentrating on relative feed values with less fluctuation in quality or make-up of rations. Producers have also worked closely with their nutritionist to maintain feeding regimes and feed stability to optimize production.

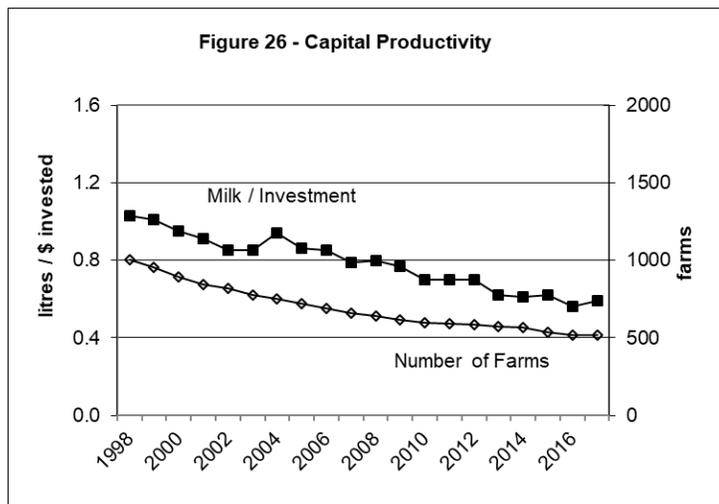
Figure 25 shows the amount of milk produced for each hour of labour on dairy farms. Through the 10 years spanning 1997 to 2007 there was a matching increase in labour productivity to increases in herd size, coming to a peak in 2008. The levelling off period from 2008 to 2013 took

<sup>1</sup> When incentive days are issued for a given month, producers can fill the resulting incentive credits by producing over their monthly quota eligibility. Incentive credits are used before underproduction credits, so all producers who ship over their quota holdings will get a benefit in the months they are issued (regardless of their cumulative position). Incentive credits are issued to encourage milk production at a specific time of year or demand.

the dairy industry through a period of time where farm labourers were hard to find. The oilfield was the greatest competition. With the introduction of the first voluntary milking systems (VMS, also called milk robots) labour efficiency saw steady improvement since 2013. Herd size has also increased, showing employees were able to manage a larger number of dairy cows. In 2017, the average herd size increased slightly to an average of 165 cows though labour hours remained quite constant. The advancements in technology and farm improvements have been crucial as the labour market is still tight and high demand for more milk production continues.



After an increase in 2003, capital investment has been slowly declining with a few time periods showing almost no change. In 2017, the total milk hectolitres sold increased by 2 per cent and investment per cow decreased by 5.6 per cent. Although the number of farms has decreased over the years, 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. It is

then that it remained relatively flat until 2013 when there is a dramatic change in herd size and investment in facilities. As herd sizes continued to grow and the use of voluntary milking systems became more popular, there was the trend to build new barns or the need to renovate existing barns. As the herd size becomes larger (see Figure 25), total investment dollars are spread over more animals.

The total value of livestock per farm (adjusted for inflation) has been flat with

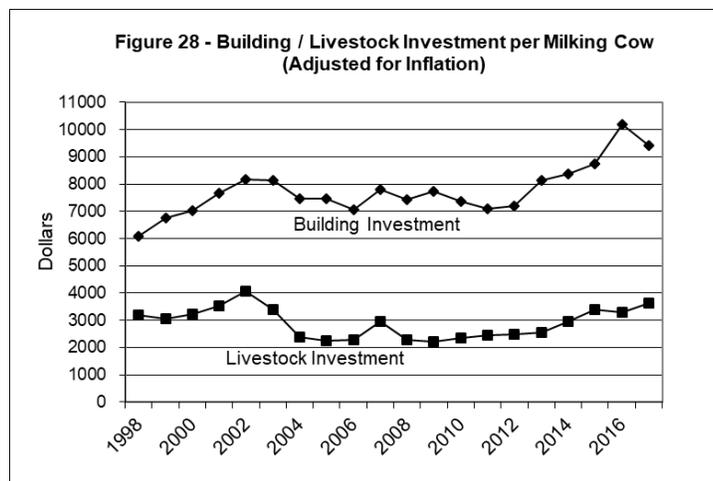
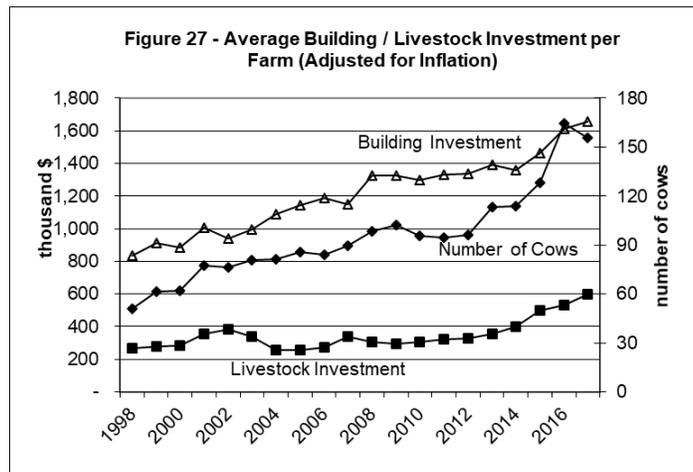
the exception of the drop in 2003 in the wake of the BSE crisis. It took several years for livestock values to rebound. Starting in 2014 and continuing through 2015 livestock values in the beef sector rose steadily and affected dairy cow market values. With the increase in demand for milk production beginning in 2016 and continuing through 2017, there was increased investment in purchasing livestock.

### Per Milking Cow

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

There is a steady number of expansion and enhancement projects in dairy herds indicating that farmers are investing to meet the growth in demand for milk production that the industry is facing.

Many farms are at the point of needing to invest in infrastructure in order to continue to increase production. In 2017, farmers are investing in livestock to meet production demands more so than in buildings. Livestock values remain high.



## Investment and Debt Levels

Total dairy farm investment (excluding quota) was only slightly lower at \$2,664,208 per farm in 2017, compared to an average of \$2,749,642 in 2016. On a per cow basis, this works out to \$16,089 (Table 12) which is a \$963 drop from the previous year. Of this total investment amount, 72 per cent was comprised of buildings and equipment investments, 23 per cent referred to livestock investments, the remaining 5 per cent was invested in land and supplies.

**Table 12**

<b>Annual Investment and Debt on Dairy Farms</b>			
	<b>2015</b>	<b>2016</b>	<b>2017</b>
	--- \$ Per Cow ---		
Land	868	919	790
Buildings and Equipment	10,968	12,709	11,578
Livestock	3,473	3,314	3,624
Supplies	102	110	97
<b>TOTAL</b>	<b>15,411</b>	<b>17,052</b>	<b>16,089</b>
Debt	3,838	4,988	4,107
Equity	11,273	12,064	11,982
<b>TOTAL</b>	<b>15,411</b>	<b>17,052</b>	<b>16,089</b>

The debt/capital ratio measures the extent of external financing on dairy farms in Alberta. This ratio decreased to 26 per cent in 2017, down from 29 per cent in 2016. This decrease reflects a positive environment where farmers are able to pay down debt. Investment in 2017 tended to be more towards the purchase of livestock to meet production demands rather than the upgrade of facilities or technology. This is also reflected in the increase in total livestock investment that increased from 19 per cent in 2016 to 22 per cent in 2017.

# Debt Repayment Capacity

The acceptable debt load or repayment capacity of a dairy enterprise can be measured by the contribution margin. The contribution margin is the difference between gross income and variable costs. It represents the amount of money available to pay for capital assets, such as: 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 2015, 2016 and 2017 is presented in Table 13.

**Table 13**

<b>Summary of Average Costs and Returns in Alberta</b>				
<b>2015 – 2017</b>				
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2015-2017</b>
	<b>----- \$ Per Cow -----</b>			
<b>A. Gross Income</b>	8212	7934	8006	8050
<b>B. Feed Costs</b>	3214	3094	2860	3059
<b>C. Variable Costs</b>	2920	2980	2943	2947
<b>Contribution Margin (A - B - C)</b>	2077	1860	2203	2043

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 2015 and 2017. An assumption behind the analysis is that feed costs vary directly with the level of production and market values. The value for purchased hay decreased by almost 20 per cent. Purchase price for barley also decreased by almost 9 per cent. This drop in feed costs is evident in Table 13.

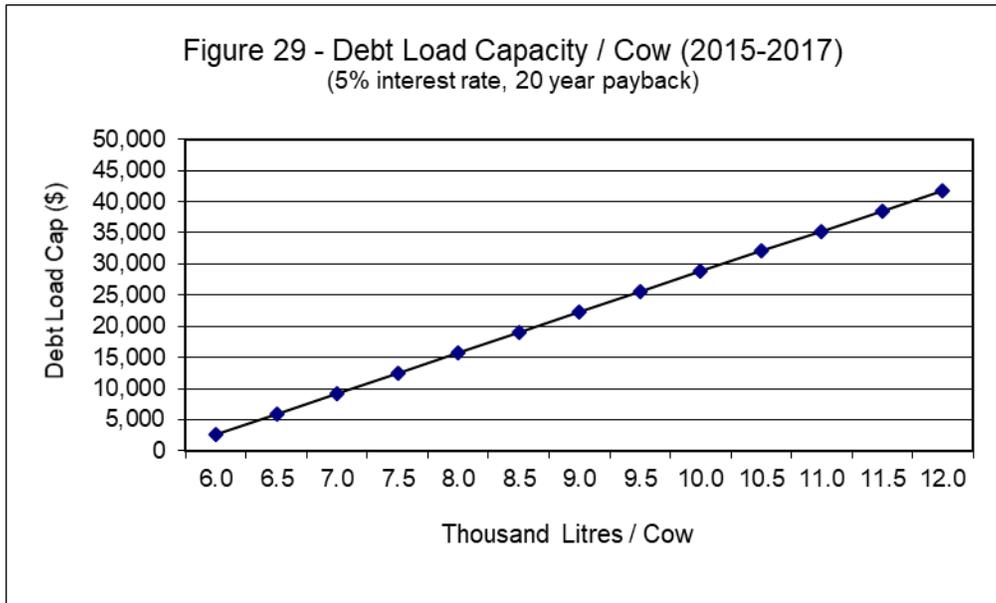
**Table 14**  
**Acceptable Total Debt-Load per Cow in Alberta, 2015-2017**

Milk Productivity (litres/cow)	Interest Rates					
	3%	4%	5%	6%	7%	8%
6000	3,048	2,784	2,553	2,350	2,170	2,011
6500	6,956	6,354	5,827	5,363	4,953	4,590
7000	10,864	9,924	9,101	8,376	7,736	7,170
7500	14,773	13,495	12,375	11,389	10,519	9,749
8000	18,681	17,065	15,648	14,402	13,303	12,328
8500	22,590	20,635	18,922	17,416	16,086	14,908
9000	26,498	24,205	22,196	20,429	18,869	17,487
9500	30,406	27,776	25,470	23,442	21,652	20,066
10000	34,315	31,346	28,744	26,455	24,435	22,645
10500	38,223	34,916	32,018	29,468	27,218	25,225
11000	42,132	38,486	35,292	32,482	30,001	27,804
11500	46,040	42,057	38,566	35,495	32,784	30,383
12000	49,948	45,627	41,840	38,508	35,567	32,963

\* With a 20 year repayment period

For example, at a milk production level of 9,500 litres per cow (which is close to the average litres/cow in 2017), the contribution margin would be \$2,044 per cow. This margin, if amortized over 20 years at 5 per cent interest, results in a debt carrying capacity of \$25,470 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 per cent. 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 per cent, 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 \$37,155 per cow<sup>2</sup> is added to the current debt of \$4,108 per cow which would mean the total amount of debt load per cow would be \$41,263. 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 between 11,500 and 12,000 litres per cow, assuming an interest rate of 5 per cent. The average interest rate for 2017 was 3.2 per cent, which would drop this required production level to about 10,750 litres per cow.

<sup>2</sup> The average value of quota for one cow in the 2017 Dairy Cost Study

# Impact of Quota Values on Dairy Returns

The cost and return analysis in this study does not include any value for the milk quota. However, new entrants into the dairy business would have to purchase quota if they are not entering the industry through the New Entrant Program. When the financing of these quota purchases (at the 2017 Dairy Cost Study average quota price) are taken into account, the average rate of return for new entrants would be a negative one per cent (Table 15). This means that the borrowing costs of capital used to purchase all the necessary quota in 2017 exceeded the financial returns obtained from producing milk. The assumption in this analysis was that all funds needed to purchase quota were borrowed at 3.2 per cent, which was the average interest rate in the 2017 study.

**Table 15: Impact of Quota Value on Dairy Returns, 2017**

	2017 Study Average	Including Quota Value*
--- \$ per Farm ---		
Dairy Investment	2,664,208	8,816,451
Debt	680,161	6,832,403
Equity	1,984,047	1,984,047
--- \$ per hL Sold ---		
Equity	129.92	129.92
Gross Income	86.80	86.80
Production Costs	75.32	75.32
Interest Cost for Quota		12.77
Potential Total Cost	75.32	88.09
Return to Equity(\$ per hL)	11.48	-1.29
Return to Equity (%)	8.8	-1.0

\*Applicable to new entrants who borrow 100 per cent of funds needed to purchase total production quota at the average value from the 2017 Dairy Cost Study of \$37,155 per kg/day.



# Appendix A

## 2017 Dairy Cost Study

### Alberta Average



**Alberta**  
**2017 Dairy Cost Study - Business Analysis**  
**39 Participants**  
**Table 1 Dairy Enterprise Costs and Returns**

	TOTAL ENTERPRISE	PER COW	PER HL SOLD	PERCENT FROM INCOME
<b>INCOME:</b>				
MILK SALES	1,215,184.68	7,338.81	79.57	
POOL ADJUSTMENTS (+ -)	654.41	3.95	.04	
MISCELLANEOUS RECEIPTS	6,107.93	36.89	.40	
NET CATTLE SALES ( + - )	69,263.39	418.30	4.54	
NET INVENTORY CHANGE ( + - )	34,443.21	208.01	2.26	
<b>GROSS INCOME -----</b>	<b>1,325,653.62</b>	<b>8,005.96</b>	<b>86.80</b>	<b>100.00</b>
<b>EXPENSES:</b>				
GRAIN	64,376.18	388.78	4.22	
COMPLETE FEED	176,174.10	1,063.96	11.54	
SUPPLEMENT	55,845.17	337.26	3.66	
MINERALS & VITAMINS	16,246.13	98.11	1.06	
ROUGHAGE	156,135.15	942.94	10.22	
PROCESSING COSTS	4,848.58	29.28	.32	
<b>TOTAL FEED COSTS -----</b>	<b>473,625.31</b>	<b>2,860.34</b>	<b>31.01</b>	<b>35.73</b>
BEDDING AND SUPPLIES	43,874.98	264.97	2.87	
BREEDING	16,511.83	99.72	1.08	
VET. AND MEDICINE	30,664.83	185.19	2.01	
MILK HAULING	51,472.12	310.85	3.37	
PRODUCER'S FEES	33,294.14	201.07	2.18	
UTILITIES	24,795.86	149.75	1.62	
FUEL, OIL, LUBE	16,503.77	99.67	1.08	
BLDG. & MACH. REPAIRS	35,839.51	216.44	2.35	
MISCELLANEOUS	48,173.43	290.93	3.15	
<b>TOTAL OTHER VARIABLE COSTS ----</b>	<b>301,130.46</b>	<b>1,818.60</b>	<b>19.72</b>	<b>22.72</b>
HIRED LABOUR	56,430.61	340.80	3.70	
FAMILY LABOUR	129,714.54	783.38	8.49	
<b>TOTAL LABOUR COSTS -----</b>	<b>186,145.15</b>	<b>1,124.18</b>	<b>12.19</b>	<b>14.04</b>
<b>TOTAL VARIABLE COSTS</b>	<b>960,900.93</b>	<b>5,803.13</b>	<b>62.92</b>	<b>72.49</b>
RENT	4,914.42	29.68	.32	
TAXES AND INSURANCE	25,813.87	155.90	1.69	
DEPRECIATION	137,012.71	827.45	8.97	
INTEREST ( CAP.DEBT)	21,574.25	130.29	1.41	
<b>TOTAL CAPITAL COSTS -----</b>	<b>189,315.25</b>	<b>1,143.32</b>	<b>12.40</b>	<b>14.28</b>
<b>TOTAL PRODUCTION COSTS</b>	<b>1,150,216.18</b>	<b>6,946.45</b>	<b>75.32</b>	<b>86.77</b>
CONTRIBUTION MARGIN (\$)	364,752.69	2,202.83	23.88	
RETURN TO EQUITY (\$)	175,437.43	1,059.51	11.49	13.23
MILK PRICE			79.61	
INVENTORY ADJUSTMENT			7.19	
RETURN TO EQUITY (%)			8.84	
AVERAGE CAP. DEBT INTEREST RATE (%)			3.17	

**Alberta**  
**2017 Dairy Cost Study - Business Analysis**  
**39 Participants**  
**Table 2 Statement of Investment**

<u>LAND BUILDINGS &amp; EQUIPMENT</u>	AGE	DEPRECIATION	DAIRY INVESTMENT
DAIRY BUILDINGS	11.94	62,895.54	<b>1,558,997.02</b>
POWER MACHINERY	8.44	25,061.69	166,806.66
DAIRY EQUIPMENT	12.63	32,810.61	122,346.46
OTHER EQUIPMENT	9.51	16,244.86	69,014.48
<b>TOTAL EQUIPMENT</b>	<b>10.11</b>	<b>74,117.16</b>	<b>358,167.59</b>
LAND			130,902.82
SUPPLIES			15,987.58
<b>** SUBTOTAL **</b>		<b>137,012.71</b>	<b>2,064,055.02</b>

<u>DAIRY LIVESTOCK</u>	--- BEGIN YEAR ---		--- END OF YEAR ---		AVERAGE
	NUMBER	VALUE	NUMBER	VALUE	VALUE
COWS	160.92	380,237.99	170.67	403,260.68	391,749.34
BRED HEIFERS	46.59	93,179.49	52.56	105,128.21	99,153.85
OPEN HEIFERS	57.90	86,846.15	56.56	84,846.15	85,846.15
HEIFER CALVES	44.49	17,794.87	47.13	18,851.28	18,323.08
BULL CALVES	11.21	1,680.77	12.44	1,865.38	1,773.08
BULLS	2.13	3,192.31	2.28	3,423.08	3,307.69
<b>** SUBTOTAL **</b>	<b>323.23</b>	<b>582,931.58</b>	<b>341.64</b>	<b>617,374.79</b>	<b>600,153.18</b>

<b>TOTAL DAIRY INVESTMENT</b> -----	<b>2,664,208.20</b>
CAPITAL LOANS	680,161.11
OPERATOR EQUITY	1,984,047.09
INVESTMENT PER COW	16,089.83
DEBT/CAPITAL RATIO	.26
CAPITAL TURNOVER ( YR )	2.01

<u>HERD SIZE</u>	Average	Median
NUMBER OF DAIRY COWS	165.58	134.33
NUMBER OF ANIMAL UNITS	260.47	206.83
DRY COWS ( % )	18.86	
CALF CROP ( % )	101.92	
PASTURE PER COW ( AC. )	.22	

<u>CATTLE SALES &amp; PURCHASES</u>	NUMBER SOLD	SELLING PRICE	NUMBER PURCHASED	PURCHASE PRICE
COWS	41.31	1,559.48	2.90	3,137.17
BRED HEIFERS	3.74	2,156.87	2.00	2,938.46
OPEN HEIFERS	3.05	1,600.56	2.49	1,431.96
HEIFER CALVES	2.41	928.14	1.03	347.50
BULL CALVES	46.72	213.32	.00	.00
BULLS	1.13	1,743.15	1.15	2,945.45
<b>TOTAL VALUE</b>		<b>91,546.61</b>		<b>22,283.22</b>

**Alberta**  
**2017 Dairy Cost Study - Business Analysis**  
**39 Participants**  
**Table 3 Labour and Management**

**LABOUR**

	<b>HOURS</b>	<b>VALUE</b>	<b>HOURLY RATE</b>
OPERATOR LABOUR	3,087.18	67,917.92	22.00
HIRED LABOUR	2,560.26	56,430.61	22.04
FAMILY UNPAID LABOUR	2,976.85	61,796.62	20.76
<b>TOTAL</b>	<b>8,624.29</b>	<b>186,145.15</b>	<b>21.58</b>
RETURN TO FAMILY LABOUR	14.33		
MAN EQUIVALENTS	3.45		
LABOUR HOURS PER COW	52.08		
YEARS FARMING	26.22		

**MILK PRODUCTION**

	<b>HL.</b>	<b>% OF TOTAL</b>	<b>VALUE</b>	<b>AVERAGE PRICE / HL</b>
MILK SALES	15,271.87	97.29	1,215,184.68	79.57
OTHER MILK PRODUCED	425.51	2.71		
<b>TOTAL</b>	<b>15,697.38</b>	<b>100.00</b>		

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

BUTTERFAT TEST	4.15 KG / HL	13.06
PROTEIN	3.35 KG / HL	3.16
L.O.S.	5.73 KG / HL	2.68
MILK PRODUCTION PER COW	9,480.05 LITRES / YEAR	

**QUOTA INFORMATION**

TPQ HOLDINGS	163.92 KG / DAY
TPQ PRICE	37,531.98 \$ / KG / DAY
CREDIT PRICE	4.85 \$ / KG

**MANAGEMENT FACTORS**

COST PER HL	75.32
MILK/FEED (KG) RATIO	2.14 LITRES
MILK/LABOUR (HR) RATIO	182.01 LITRES
MILK/CAPITAL (\$) RATIO	.59 LITRES

**Alberta**  
**2017 Dairy Cost Study - Business Analysis**  
**39 Participants**  
**Table 4 Feed Report**

	--- PURCHASED ---		--- HOMEGROWN---	
<u>CONCENTRATES</u>	QUANTITY (TONNES)	PRICE	QUANTITY (TONNES)	PRICE
OATS	1.62	137.79	1.40	184.63
BARLEY	110.57	169.99	97.06	169.32
WHEAT	.00	.00	.51	189.50
MIXED GRAIN	.00	.00	.00	.00
BREW GRAIN (DRY EQ. )	12.77	241.94		
BEET PULP	3.25	283.42		
OTHER PURCHASED	69.99	350.83		
DAIRY RATION	306.64	512.85		
CALF FEED	20.23	559.05		
MILK REPLACER	2.26	3,370.64		
SUPPLEMENT	87.35	605.17		
MOLASSES	8.61	346.52		
SALT	1.49	579.21		
MINERALS & VITAMINS	11.24	1,368.66		
<b>SUBTOTAL -----</b>	<b>636.03</b>	<b>295,853.11</b>	<b>98.97</b>	<b>16,788.48</b>
<u>ROUGHAGE</u>				
ALFALFA HAY	161.24	166.37	126.42	135.65
ALFALFA PELLETS	.00	.00		
STRAW FED	9.35	59.90	17.49	58.00
GREENFEED	7.41	100.00	4.24	100.11
SILAGE/HAYLAGE (DRY EQ.)	204.20	128.99	723.09	114.90
<b>SUBTOTAL -----</b>	<b>382.20</b>	<b>54,464.91</b>	<b>871.24</b>	<b>101,670.24</b>
GRINDING & PROCESSING		4,848.58		
<b>GRAND TOTAL FEED COSTS -----</b>		<b>355,166.59</b>		<b>118,458.71</b>
BEDDING	206.40	65.17	46.12	57.35
AV. PRICE:	CONCENTRATE	425.36 \$/TONNE		
	ROUGHAGE	124.57 \$/TONNE		
FED PER COW:	CONCENTRATE	4.44 TONNES		
	ROUGHAGE	7.57 TONNES		
% HOME GROWN:	CONCENTRATE	13.47 %		
	ROUGHAGE	69.51 %		

# Appendix B

## 2017 Dairy Cost Study

### Northern Alberta Average



**Northern Alberta**  
**2017 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	1,209,321.17	6,456.03	79.52	
POOL ADJUSTMENTS (+ -)	658.81	3.52	.04	
MISCELLANEOUS RECEIPTS	6,557.61	35.01	.43	
NET CATTLE SALES ( + - )	133,060.89	710.35	8.75	
NET INVENTORY CHANGE ( + - )	13,201.31	70.48	.87	
<b>GROSS INCOME -----</b>	<b>1,362,799.79</b>	<b>7,275.38</b>	<b>89.61</b>	<b>100.00</b>
<b>EXPENSES:</b>				
GRAIN	86,101.52	459.66	5.66	
COMPLETE FEED	148,626.70	793.45	9.77	
SUPPLEMENT	54,741.67	292.24	3.60	
MINERALS & VITAMINS	11,704.68	62.49	.77	
ROUGHAGE	151,425.13	808.39	9.96	
PROCESSING COSTS	12,606.30	67.30	.83	
<b>TOTAL FEED COSTS -----</b>	<b>465,206.00</b>	<b>2,483.53</b>	<b>30.59</b>	<b>34.14</b>
BEDDING AND SUPPLIES	42,745.75	228.20	2.81	
BREEDING	20,115.11	107.39	1.32	
VET. AND MEDICINE	37,356.63	199.43	2.46	
MILK HAULING	51,257.83	273.64	3.37	
PRODUCER'S FEES	32,546.77	173.75	2.14	
UTILITIES	26,252.53	140.15	1.73	
FUEL, OIL, LUBE	15,022.20	80.20	.99	
BLDG. & MACH. REPAIRS	47,147.31	251.70	3.10	
MISCELLANEOUS	67,613.65	360.96	4.45	
<b>TOTAL OTHER VARIABLE COSTS ----</b>	<b>340,057.77</b>	<b>1,815.42</b>	<b>22.36</b>	<b>24.95</b>
HIRED LABOUR	96,574.98	515.57	6.35	
FAMILY LABOUR	105,328.67	562.30	6.93	
<b>TOTAL LABOUR COSTS -----</b>	<b>201,903.65</b>	<b>1,077.87</b>	<b>13.28</b>	<b>14.82</b>
<b>TOTAL VARIABLE COSTS</b>	<b>1,007,167.42</b>	<b>5,376.82</b>	<b>66.23</b>	<b>73.90</b>
RENT	9,698.50	51.78	.64	
TAXES AND INSURANCE	31,937.54	170.50	2.10	
DEPRECIATION	137,138.24	732.12	9.02	
INTEREST ( CAP.DEBT)	28,112.64	150.08	1.85	
<b>TOTAL CAPITAL COSTS -----</b>	<b>206,886.92</b>	<b>1,104.48</b>	<b>13.60</b>	<b>15.18</b>
<b>TOTAL PRODUCTION COSTS</b>	<b>1,214,054.34</b>	<b>6,481.29</b>	<b>79.83</b>	<b>89.09</b>
CONTRIBUTION MARGIN (\$)	355,632.36	1,898.56	23.39	
RETURN TO EQUITY (\$)	148,745.45	794.09	9.78	10.91
MILK PRICE			79.57	
INVENTORY ADJUSTMENT			10.05	
RETURN TO EQUITY (%)			8.05	
AVERAGE CAP. DEBT INTEREST RATE (%)			3.08	

**Northern Alberta  
2017 Dairy Cost Study - Business Analysis  
15 Participants  
Table 2 Statement of Investment**

<u>LAND BUILDINGS &amp; EQUIPMENT</u>	AGE	DEPRECIATION	DAIRY INVESTMENT
DAIRY BUILDINGS	12.23	67,596.95	<b>1,679,499.44</b>
POWER MACHINERY	9.50	20,680.33	135,458.97
DAIRY EQUIPMENT	11.71	33,697.78	130,817.81
OTHER EQUIPMENT	8.91	15,163.18	65,928.79
<b>TOTAL EQUIPMENT</b>	<b>10.23</b>	<b>69,541.29</b>	<b>332,205.57</b>
LAND			93,000.00
SUPPLIES			19,939.56
<b>** SUBTOTAL **</b>		<b>137,138.24</b>	<b>2,124,644.57</b>

<u>DAIRY LIVESTOCK</u>	--- BEGIN YEAR ---		--- END OF YEAR ---		AVERAGE VALUE
	NUMBER	VALUE	NUMBER	VALUE	
COWS	183.40	409,429.49	189.40	422,824.13	416,126.81
BRED HEIFERS	46.00	92,000.00	52.87	105,733.33	98,866.67
OPEN HEIFERS	64.47	96,700.00	54.07	81,100.00	88,900.00
HEIFER CALVES	70.47	28,186.67	73.00	29,200.00	28,693.33
BULL CALVES	21.27	3,190.00	25.00	3,750.00	3,470.00
BULLS	.87	1,300.00	.93	1,400.00	1,350.00
<b>** SUBTOTAL **</b>	<b>386.47</b>	<b>630,806.16</b>	<b>395.27</b>	<b>644,007.46</b>	<b>637,406.81</b>

<b>TOTAL DAIRY INVESTMENT</b> -----	<b>2,762,051.38</b>
CAPITAL LOANS	913,383.85
OPERATOR EQUITY	1,848,667.53
INVESTMENT PER COW	14,745.36
DEBT/CAPITAL RATIO	.33
CAPITAL TURNOVER ( YR )	2.03

<u>HERD SIZE</u>	Average	Median
NUMBER OF DAIRY COWS	187.32	117.33
NUMBER OF ANIMAL UNITS	292.21	182.33
DRY COWS ( % )	21.57	
CALF CROP ( % )	101.68	
PASTURE PER COW ( AC. )	.17	

<u>CATTLE SALES &amp; PURCHASES</u>	NUMBER SOLD	SELLING PRICE	NUMBER PURCHASED	PURCHASE PRICE
COWS	49.60	1,883.74	.33	2,200.00
BRED HEIFERS	8.53	2,164.56	1.00	3,226.67
OPEN HEIFERS	5.60	1,671.84	.00	.00
HEIFER CALVES	4.80	1,096.18	2.67	347.50
BULL CALVES	53.93	220.44	.00	.00
BULLS	.07	1,200.00	.20	2,750.00
<b>TOTAL VALUE</b>		<b>138,497.56</b>		<b>5,436.67</b>

**Northern Alberta  
2017 Dairy Cost Study - Business Analysis  
15 Participants  
Table 3 Labour and Management**

**LABOUR**

	<b>HOURS</b>	<b>VALUE</b>	<b>HOURLY RATE</b>
OPERATOR LABOUR	2,385.37	52,478.07	22.00
HIRED LABOUR	4,416.85	96,574.98	21.87
FAMILY UNPAID LABOUR	2,438.20	52,850.60	21.68
<b>TOTAL</b>	<b>9,240.42</b>	<b>201,903.65</b>	<b>21.85</b>
RETURN TO FAMILY LABOUR	10.52		
MAN EQUIVALENTS	3.70		
LABOUR HOURS PER COW	49.33		
YEARS FARMING	26.17		

**MILK PRODUCTION**

	<b>HL.</b>	<b>% OF TOTAL</b>	<b>VALUE</b>	<b>AVERAGE PRICE / HL</b>
MILK SALES	15,207.30	96.73	1,209,321.17	79.52
OTHER MILK PRODUCED	514.66	3.27		
<b>TOTAL</b>	<b>15,721.96</b>	<b>100.00</b>		

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

BUTTERFAT TEST	4.17 KG / HL	13.05
PROTEIN	3.38 KG / HL	3.16
L.O.S.	5.73 KG / HL	2.69
MILK PRODUCTION PER COW	8,393.25 LITRES / YEAR	

**QUOTA INFORMATION**

TPQ HOLDINGS	169.42 KG / DAY
TPQ PRICE	38,118.51 \$ / KG / DAY
CREDIT PRICE	4.74 \$ / KG

**MANAGEMENT FACTORS**

COST PER HL	79.83
MILK/FEED (KG) RATIO	1.93 LITRES
MILK/LABOUR (HR) RATIO	170.14 LITRES
MILK/CAPITAL (\$) RATIO	.57 LITRES

**Northern Alberta  
2017 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	280.20	170.36	70.11	155.20
WHEAT	.00	.00	.70	183.99
MIXED GRAIN	.00	.00	.00	.00
BREW GRAIN (DRY EQ. )	17.10	315.32		
BEET PULP	6.46	299.60		
OTHER PURCHASED	57.74	346.89		
DAIRY RATION	253.46	547.62		
CALF FEED	11.96	559.97		
MILK REPLACER	.92	3,392.98		
SUPPLEMENT	107.54	500.36		
MOLASSES	2.88	323.74		
SALT	1.92	643.76		
MINERALS & VITAMINS	5.72	1,830.04		
<b>SUBTOTAL -----</b>	<b>745.90</b>	<b>290,163.14</b>	<b>70.82</b>	<b>11,011.44</b>
<u>ROUGHAGE</u>				
ALFALFA HAY	82.52	173.84	61.01	103.90
ALFALFA PELLETS	.00	.00		
STRAW FED	18.97	56.11	17.64	54.25
GREENFEED	19.26	100.00	.00	.00
SILAGE/HAYLAGE (DRY EQ.)	406.59	138.93	749.06	93.86
<b>SUBTOTAL -----</b>	<b>527.35</b>	<b>73,824.99</b>	<b>827.70</b>	<b>77,600.14</b>
GRINDING & PROCESSING		12,606.30		
<b>GRAND TOTAL FEED COSTS -----</b>		<b>376,594.43</b>		<b>88,611.58</b>
BEDDING	208.30	64.91	51.48	54.38
AV. PRICE:	CONCENTRATE	368.76 \$/TONNE		
	ROUGHAGE	111.75 \$/TONNE		
FED PER COW:	CONCENTRATE	4.36 TONNES		
	ROUGHAGE	7.23 TONNES		
% HOME GROWN:	CONCENTRATE	8.67 %		
	ROUGHAGE	61.08 %		

# Appendix C

## 2017 Dairy Cost Study

### Southern Alberta Average



**Southern Alberta**  
**2017 Dairy Cost Study - Business Analysis**  
**24 Participants**  
**Table 1 Dairy Enterprise Costs and Returns**

	TOTAL ENTERPRISE	PER COW	PER HL SOLD	PERCENT FROM INCOME
<b>INCOME:</b>				
MILK SALES	1,218,849.38	8,018.75	79.60	
POOL ADJUSTMENTS (+ -)	651.66	4.29	.04	
MISCELLANEOUS RECEIPTS	5,826.88	38.33	.38	
NET CATTLE SALES ( + - )	29,389.95	193.35	1.92	
NET INVENTORY CHANGE ( + - )	48,444.09	318.71	3.16	
<b>GROSS INCOME -----</b>	<b>1,303,161.95</b>	<b>8,573.43</b>	<b>85.11</b>	<b>100.00</b>
<b>EXPENSES:</b>				
GRAIN	50,797.85	334.20	3.32	
COMPLETE FEED	193,391.22	1,272.31	12.63	
SUPPLEMENT	56,534.86	371.94	3.69	
MINERALS & VITAMINS	19,084.54	125.56	1.25	
ROUGHAGE	159,078.91	1,046.57	10.39	
PROCESSING COSTS	.00	.00	.00	
<b>TOTAL FEED COSTS -----</b>	<b>478,887.38</b>	<b>3,150.57</b>	<b>31.27</b>	<b>36.75</b>
BEDDING AND SUPPLIES	44,580.75	293.29	2.91	
BREEDING	14,259.78	93.81	.93	
VET. AND MEDICINE	26,482.45	174.23	1.73	
MILK HAULING	51,606.06	339.51	3.37	
PRODUCER'S FEES	33,761.25	222.11	2.20	
UTILITIES	23,885.44	157.14	1.56	
FUEL, OIL, LUBE	17,429.75	114.67	1.14	
BLDG. & MACH. REPAIRS	28,772.13	189.29	1.88	
MISCELLANEOUS	36,023.29	237.00	2.35	
<b>TOTAL OTHER VARIABLE COSTS ----</b>	<b>276,800.90</b>	<b>1,821.06</b>	<b>18.08</b>	<b>21.24</b>
HIRED LABOUR	31,340.38	206.19	2.05	
FAMILY LABOUR	144,955.72	953.66	9.47	
<b>TOTAL LABOUR COSTS -----</b>	<b>176,296.10</b>	<b>1,159.84</b>	<b>11.51</b>	<b>13.53</b>
<b>TOTAL VARIABLE COSTS</b>	<b>931,984.37</b>	<b>6,131.48</b>	<b>60.87</b>	<b>71.52</b>
RENT	1,924.37	12.66	.13	
TAXES AND INSURANCE	21,986.59	144.65	1.44	
DEPRECIATION	136,934.25	900.88	8.94	
INTEREST ( CAP.DEBT)	17,487.76	115.05	1.14	
<b>TOTAL CAPITAL COSTS -----</b>	<b>178,332.97</b>	<b>1,173.24</b>	<b>11.65</b>	<b>13.68</b>
<b>TOTAL PRODUCTION COSTS</b>	<b>1,110,317.34</b>	<b>7,304.72</b>	<b>72.51</b>	<b>85.20</b>
CONTRIBUTION MARGIN (\$)	371,177.58	2,441.96	24.24	
RETURN TO EQUITY (\$)	192,844.62	1,268.71	12.59	14.80
MILK PRICE			79.64	
INVENTORY ADJUSTMENT			5.46	
RETURN TO EQUITY (%)			9.32	
AVERAGE CAP. DEBT INTEREST RATE (%)			3.27	

**Southern Alberta  
2017 Dairy Cost Study - Business Analysis  
24 Participants  
Table 2 Statement of Investment**

<u>LAND BUILDINGS &amp; EQUIPMENT</u>	AGE	DEPRECIATION	DAIRY INVESTMENT
DAIRY BUILDINGS	11.72	59,957.17	<b>1,483,618.19</b>
POWER MACHINERY	7.88	27,800.05	186,583.17
DAIRY EQUIPMENT	13.23	32,256.12	117,051.49
OTHER EQUIPMENT	9.82	16,920.92	71,003.39
<b>TOTAL EQUIPMENT</b>	<b>10.04</b>	<b>76,977.09</b>	<b>374,638.05</b>
LAND			154,592.08
SUPPLIES			13,517.60
<b>** SUBTOTAL **</b>		<b>136,934.25</b>	<b>2,026,365.92</b>

<u>DAIRY LIVESTOCK</u>	--- BEGIN YEAR ---		--- END OF YEAR ---		AVERAGE
	NUMBER	VALUE	NUMBER	VALUE	VALUE
COWS	146.88	361,797.75	158.96	391,562.67	376,680.21
BRED HEIFERS	46.96	93,916.67	52.38	104,750.00	99,333.33
OPEN HEIFERS	53.79	80,687.50	58.13	87,187.50	83,937.50
HEIFER CALVES	28.25	11,300.00	30.96	12,383.33	11,841.67
BULL CALVES	4.92	737.50	4.58	687.50	712.50
BULLS	2.92	4,375.00	3.13	4,687.50	4,531.25
<b>** SUBTOTAL **</b>	<b>283.71</b>	<b>552,814.41</b>	<b>308.13</b>	<b>601,258.50</b>	<b>577,036.46</b>

<b>TOTAL DAIRY INVESTMENT</b> -----	<b>2,603,402.38</b>
CAPITAL LOANS	534,396.89
OPERATOR EQUITY	2,069,005.48
INVESTMENT PER COW	17,127.65
DEBT/CAPITAL RATIO	.21
CAPITAL TURNOVER ( YR )	2.00

<u>HERD SIZE</u>	Average	Median
NUMBER OF DAIRY COWS	152.00	142.67
NUMBER OF ANIMAL UNITS	240.64	220.50
DRY COWS ( % )	16.78	
CALF CROP ( % )	102.11	
PASTURE PER COW ( AC. )	.25	

<u>CATTLE SALES &amp; PURCHASES</u>	NUMBER SOLD	SELLING PRICE	NUMBER PURCHASED	PURCHASE PRICE
COWS	36.13	1,281.23	4.50	3,180.56
BRED HEIFERS	.75	2,102.16	2.63	2,869.84
OPEN HEIFERS	1.46	1,429.48	4.04	1,431.96
HEIFER CALVES	.92	378.18	.00	.00
BULL CALVES	42.21	207.64	.00	.00
BULLS	1.79	1,755.78	1.75	2,959.42
<b>TOTAL VALUE</b>		<b>62,202.26</b>		<b>32,812.31</b>

**Southern Alberta  
2017 Dairy Cost Study - Business Analysis  
24 Participants  
Table 3 Labour and Management**

**LABOUR**

	<b>HOURS</b>	<b>VALUE</b>	<b>HOURLY RATE</b>
OPERATOR LABOUR	3,525.81	77,567.83	22.00
HIRED LABOUR	1,399.89	31,340.38	22.39
FAMILY UNPAID LABOUR	3,313.51	67,387.89	20.34
<b>TOTAL</b>	<b>8,239.21</b>	<b>176,296.10</b>	<b>21.40</b>
RETURN TO FAMILY LABOUR	16.11		
MAN EQUIVALENTS	3.30		
LABOUR HOURS PER COW	54.21		
YEARS FARMING	26.25		

**MILK PRODUCTION**

	<b>HL.</b>	<b>% OF TOTAL</b>	<b>VALUE</b>	<b>AVERAGE PRICE / HL</b>
MILK SALES	15,312.23	97.64	1,218,849.38	79.60
OTHER MILK PRODUCED	369.79	2.36		
<b>TOTAL</b>	<b>15,682.01</b>	<b>100.00</b>		

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

BUTTERFAT TEST	4.13 KG / HL	13.06
PROTEIN	3.32 KG / HL	3.15
L.O.S.	5.73 KG / HL	2.67
MILK PRODUCTION PER COW	10,317.12 LITRES / YEAR	

**QUOTA INFORMATION**

TPQ HOLDINGS	160.49 KG / DAY
TPQ PRICE	37,368.60 \$ / KG / DAY
CREDIT PRICE	4.98 \$ / KG

**MANAGEMENT FACTORS**

COST PER HL	72.51
MILK/FEED (KG) RATIO	2.29 LITRES
MILK/LABOUR (HR) RATIO	190.33 LITRES
MILK/CAPITAL (\$) RATIO	.60 LITRES

**Southern Alberta  
2017 Dairy Cost Study - Business Analysis  
24 Participants  
Table 4 Feed Report**

<u>CONCENTRATES</u>	--- PURCHASED ---		--- HOMEGROWN---	
	QUANTITY (TONNES)	PRICE	QUANTITY (TONNES)	PRICE
OATS	2.64	137.79	2.27	184.63
BARLEY	4.55	155.68	113.90	174.75
WHEAT	.00	.00	.39	195.70
MIXED GRAIN	.00	.00	.00	.00
BREW GRAIN (DRY EQ. )	10.07	164.10		
BEET PULP	1.25	231.18		
OTHER PURCHASED	77.65	352.66		
DAIRY RATION	339.87	496.65		
CALF FEED	25.40	558.78		
MILK REPLACER	3.09	3,366.47		
SUPPLEMENT	74.73	699.43		
MOLASSES	12.19	349.88		
SALT	1.22	515.66		
MINERALS & VITAMINS	14.69	1,256.37		
<b>SUBTOTAL -----</b>	<b>567.36</b>	<b>299,409.34</b>	<b>116.56</b>	<b>20,399.13</b>
<u>ROUGHAGE</u>				
ALFALFA HAY	210.44	164.54	167.31	142.88
ALFALFA PELLETS	.00	.00		
STRAW FED	3.33	73.36	17.39	60.38
GREENFEED	.00	.00	6.90	100.11
SILAGE/HAYLAGE (DRY EQ.)	77.70	96.46	706.85	128.84
<b>SUBTOTAL -----</b>	<b>291.48</b>	<b>42,364.86</b>	<b>898.45</b>	<b>116,714.05</b>
GRINDING & PROCESSING		.00		
<b>GRAND TOTAL FEED COSTS -----</b>		<b>341,774.20</b>		<b>137,113.18</b>
BEDDING	205.22	65.33	42.77	59.59
AV. PRICE:	CONCENTRATE	467.61 \$/TONNE		
	ROUGHAGE	133.69 \$/TONNE		
FED PER COW:	CONCENTRATE	4.50 TONNES		
	ROUGHAGE	7.83 TONNES		
% HOME GROWN:	CONCENTRATE	17.04 %		
	ROUGHAGE	75.50 %		

Appendix D  
Dairy Cost Study  
Alberta 5 Year Average  
(2013 – 2017)



**Alberta Dairy Cost Study  
Business Analysis (2013 - 2017)  
Average 46 Participants**

**Table 1 Dairy Enterprise Costs and Returns**

	TOTAL ENTERPRISE	PER COW	PER HL SOLD	PERCENT FROM INCOME
<b>INCOME:</b>				
MILK SALES	1,087,301.67	7,260.40	80.59	
POOL ADJUSTMENTS (+ -)	3,430.98	24.23	.28	
MISCELLANEOUS RECEIPTS	5,881.94	39.37	.44	
NET CATTLE SALES ( + - )	66,812.88	444.83	4.91	
NET INVENTORY CHANGE ( + - )	18,370.09	121.00	1.34	
<b>GROSS INCOME -----</b>	<b>1,181,797.56</b>	<b>7,889.84</b>	<b>87.56</b>	<b>100.00</b>
<b>EXPENSES:</b>				
GRAIN	61,652.07	410.98	4.57	
COMPLETE FEED	151,708.69	1,013.40	11.27	
SUPPLEMENT	54,771.90	366.68	4.06	
MINERALS & VITAMINS	11,501.92	76.36	.85	
ROUGHAGE	159,878.79	1,066.26	11.80	
PROCESSING COSTS	3,243.96	21.39	.24	
<b>TOTAL FEED COSTS -----</b>	<b>442,757.34</b>	<b>2,955.07</b>	<b>32.78</b>	<b>37.44</b>
BEDDING AND SUPPLIES	39,039.37	259.85	2.88	
BREEDING	13,848.87	92.06	1.02	
VET. AND MEDICINE	25,719.33	170.97	1.89	
MILK HAULING	44,153.59	293.39	3.25	
PRODUCER'S FEES	28,788.70	191.78	2.13	
UTILITIES	22,864.52	153.07	1.70	
FUEL, OIL, LUBE	17,708.37	119.59	1.33	
BLDG. & MACH. REPAIRS	32,654.73	217.33	2.41	
MISCELLANEOUS	43,612.59	290.53	3.22	
<b>TOTAL OTHER VARIABLE COSTS ----</b>	<b>268,390.08</b>	<b>1,788.57</b>	<b>19.83</b>	<b>22.66</b>
HIRED LABOUR	46,600.43	310.38	3.44	
FAMILY LABOUR	119,678.00	802.35	8.93	
<b>TOTAL LABOUR COSTS -----</b>	<b>166,278.43</b>	<b>1,112.72</b>	<b>12.37</b>	<b>14.12</b>
<b>TOTAL VARIABLE COSTS</b>	<b>877,425.85</b>	<b>5,856.36</b>	<b>64.98</b>	<b>74.22</b>
RENT	3,261.83	21.49	.24	
TAXES AND INSURANCE	22,255.35	148.49	1.65	
DEPRECIATION	123,262.50	820.91	9.11	
INTEREST ( CAP.DEBT)	22,753.09	152.45	1.70	
<b>TOTAL CAPITAL COSTS -----</b>	<b>171,532.78</b>	<b>1,143.34</b>	<b>12.69</b>	<b>14.50</b>
<b>TOTAL PRODUCTION COSTS</b>	<b>1,048,958.63</b>	<b>6,999.70</b>	<b>77.67</b>	<b>88.72</b>
CONTRIBUTION MARGIN (\$)	304,371.71	2,033.47	22.58	
RETURN TO EQUITY (\$)	132,838.94	890.14	9.89	11.28
MILK PRICE			80.87	
INVENTORY ADJUSTMENT			6.69	
RETURN TO EQUITY (%)			7.83	
AVERAGE CAP. DEBT INTEREST RATE (%)			3.78	

**Alberta Dairy Cost Study  
Business Analysis (2013 - 2017)  
Average 46 Participants  
Table 2 Statement of Investment**

<u>LAND BUILDINGS &amp; EQUIPMENT</u>		AGE	DEPRECIATION	DAIRY INVESTMENT	
DAIRY BUILDINGS		12.24	54,400.51	<b>1,351,204.41</b>	
POWER MACHINERY		8.18	24,275.17	162,186.74	
DAIRY EQUIPMENT		11.75	29,009.24	112,358.11	
OTHER EQUIPMENT		9.10	15,577.58	67,226.38	
<b>TOTAL EQUIPMENT</b>		<b>9.52</b>	<b>68,861.99</b>	<b>341,771.22</b>	
LAND				127,927.66	
SUPPLIES				15,906.33	
<b>** SUBTOTAL **</b>			<b>123,262.50</b>	<b>1,836,809.62</b>	
<u>DAIRY LIVESTOCK</u>	--- BEGIN YEAR ---		--- END OF YEAR ---		AVERAGE VALUE
	NUMBER	VALUE	NUMBER	VALUE	
COWS	148.21	313,415.77	153.49	324,930.89	319,173.33
BRED HEIFERS	43.63	82,479.45	46.46	88,026.15	85,252.80
OPEN HEIFERS	55.57	69,384.52	56.78	70,332.39	69,858.46
HEIFER CALVES	42.09	11,498.56	42.74	11,716.00	11,607.28
BULL CALVES	8.90	1,300.19	8.61	1,379.68	1,339.94
BULLS	1.88	2,822.01	1.92	2,885.49	2,853.75
<b>** SUBTOTAL **</b>	<b>300.28</b>	<b>480,900.51</b>	<b>310.02</b>	<b>499,270.60</b>	<b>490,085.56</b>
<b>TOTAL DAIRY INVESTMENT</b> -----					<b>2,326,895.17</b>
CAPITAL LOANS					612,990.75
OPERATOR EQUITY					1,713,904.42
INVESTMENT PER COW					15,481.50
DEBT/CAPITAL RATIO					.26
CAPITAL TURNOVER ( YR )					1.96
<u>HERD SIZE</u>	Average	Median			
NUMBER OF DAIRY COWS	149.62	124.59			
NUMBER OF ANIMAL UNITS	237.50	192.87			
DRY COWS ( % )	19.68				
CALF CROP ( % )	103.49				
PASTURE PER COW ( AC. )	.28				
<u>CATTLE SALES &amp; PURCHASES</u>	NUMBER SOLD	SELLING PRICE	NUMBER PURCHASED	PURCHASE PRICE	
COWS	42.41	1,379.54	2.05	2,484.02	
BRED HEIFERS	2.56	1,938.82	1.14	2,289.53	
OPEN HEIFERS	2.07	1,688.63	.59	1,293.27	
HEIFER CALVES	.99	434.16	.22	244.71	
BULL CALVES	42.35	198.76	.00	.00	
BULLS	1.10	1,887.10	1.04	2,905.37	
<b>TOTAL VALUE</b>		<b>78,492.11</b>		<b>11,679.23</b>	

**Alberta Dairy Cost Study  
Business Analysis (2013 - 2017)  
Average 46 Participants  
Table 3 Labour and Management**

**LABOUR**

	HOURS	VALUE	HOURLY RATE
OPERATOR LABOUR	3,085.40	67,194.68	21.80
HIRED LABOUR	2,153.00	46,600.43	21.67
FAMILY UNPAID LABOUR	2,513.44	52,483.33	20.90
<b>TOTAL</b>	<b>7,751.84</b>	<b>166,278.43</b>	<b>21.47</b>
RETURN TO FAMILY LABOUR	11.58		
MAN EQUIVALENTS	3.10		
LABOUR HOURS PER COW	51.82		
YEARS FARMING	24.97		

**MILK PRODUCTION**

	HL.	% OF TOTAL	VALUE	AVERAGE PRICE / HL
MILK SALES	13,512.14	97.06	1,087,301.67	80.59
OTHER MILK PRODUCED	404.91	2.94		
<b>TOTAL</b>	<b>13,917.05</b>	<b>100.00</b>		

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

BUTTERFAT TEST	4.04 KG / HL	11.83
PROTEIN	3.32 KG / HL	4.06
L.O.S.	5.72 KG / HL	3.45
MILK PRODUCTION PER COW	9,285.02 LITRES / YEAR	

**QUOTA INFORMATION**

TPQ HOLDINGS	140.52 KG / DAY
TPQ PRICE	37,866.02 \$ / KG / DAY
CREDIT PRICE	8.27 \$ / KG

**MANAGEMENT FACTORS**

COST PER HL	77.67
MILK/FEED (KG) RATIO	2.10 LITRES
MILK/LABOUR (HR) RATIO	179.23 LITRES
MILK/CAPITAL (\$) RATIO	.60 LITRES

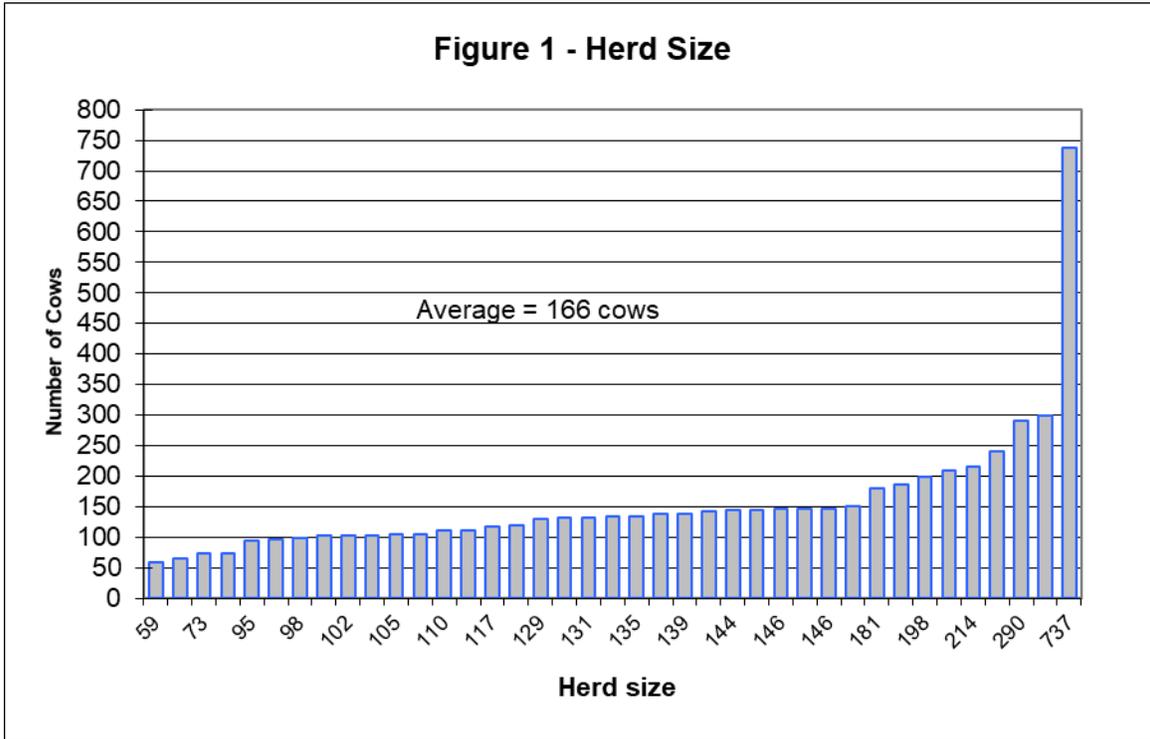
**Alberta Dairy Cost Study  
Business Analysis (2013 - 2017)  
Average 46 Participants  
Table 4 Feed Report**

<u>CONCENTRATES</u>	--- PURCHASED ---		--- HOMEGROWN---	
	QUANTITY (TONNES)	PRICE	QUANTITY (TONNES)	PRICE
OATS	2.67	127.97	2.84	186.57
BARLEY	81.79	186.54	113.34	187.19
WHEAT	.04	42.20	.91	204.17
MIXED GRAIN	6.95	92.82	.00	.00
BREW GRAIN (DRY EQ. )	13.51	205.59		
BEET PULP	6.28	209.84		
OTHER PURCHASED	47.18	368.18		
DAIRY RATION	258.42	529.95		
CALF FEED	19.50	522.36		
MILK REPLACER	1.43	3,454.45		
SUPPLEMENT	91.14	582.26		
MOLASSES	5.65	310.47		
SALT	1.50	494.22		
MINERALS & VITAMINS	9.20	1,159.47		
<b>SUBTOTAL -----</b>	<b>545.27</b>	<b>257,486.35</b>	<b>117.10</b>	<b>22,148.24</b>
<u>ROUGHAGE</u>				
ALFALFA HAY	148.68	160.64	155.69	164.59
ALFALFA PELLETS	.00	.00		
STRAW FED	5.12	60.76	17.27	59.03
GREENFEED	1.95	80.68	3.64	121.42
SILAGE/HAYLAGE (DRY EQ.)	210.13	127.79	567.31	144.95
<b>SUBTOTAL -----</b>	<b>365.88</b>	<b>51,525.02</b>	<b>743.90</b>	<b>108,353.77</b>
GRINDING & PROCESSING		3,243.96		
<b>GRAND TOTAL FEED COSTS -----</b>		<b>312,255.33</b>		<b>130,502.01</b>
BEDDING	167.80	62.68	74.20	56.50
AV. PRICE:	CONCENTRATE	422.22 \$/TONNE		
	ROUGHAGE	143.88 \$/TONNE		
FED PER COW:	CONCENTRATE	4.42 TONNES		
	ROUGHAGE	7.42 TONNES		
% HOME GROWN:	CONCENTRATE	17.93 %		
	ROUGHAGE	67.09 %		

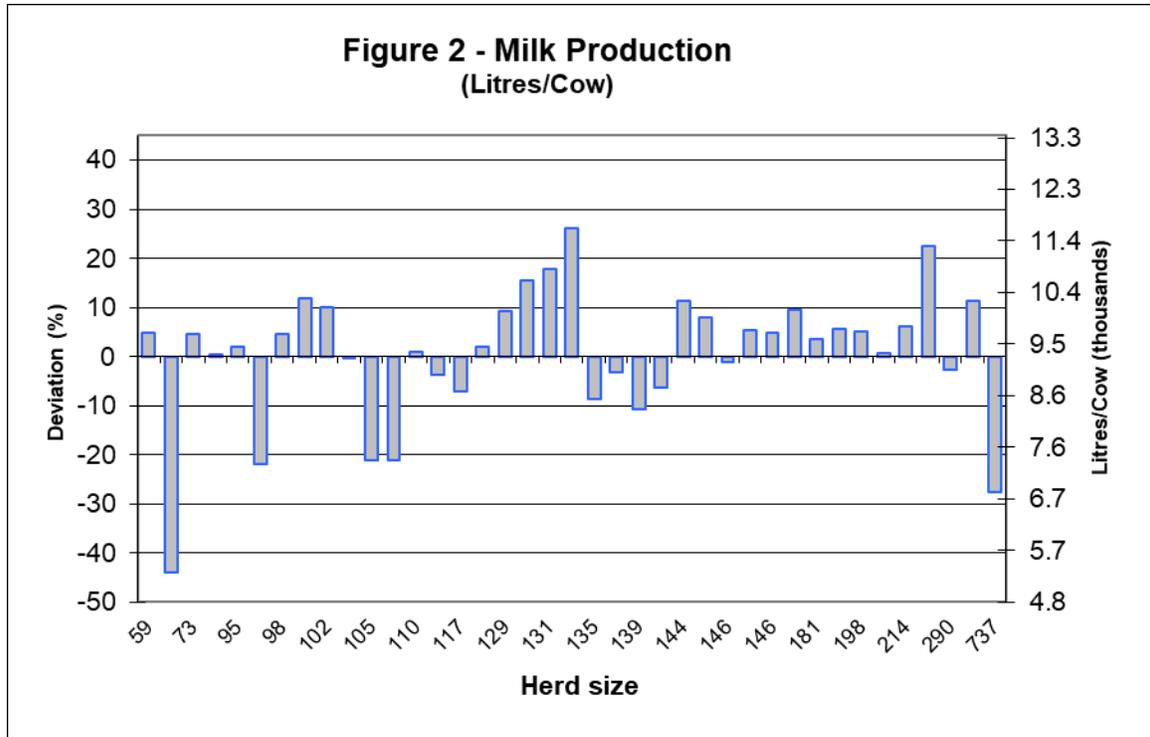
Appendix E  
2017 Dairy Cost Study  
Individual Participant Results  
(39 Participants)



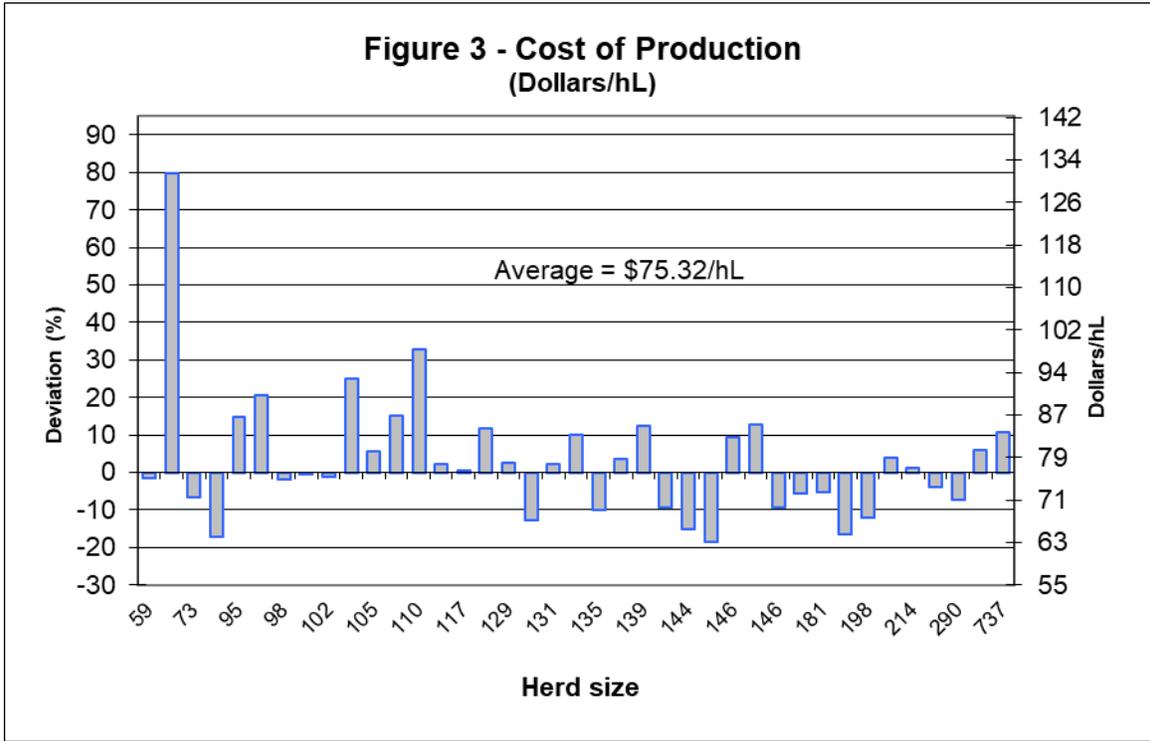
**Figure 1 - Herd Size**



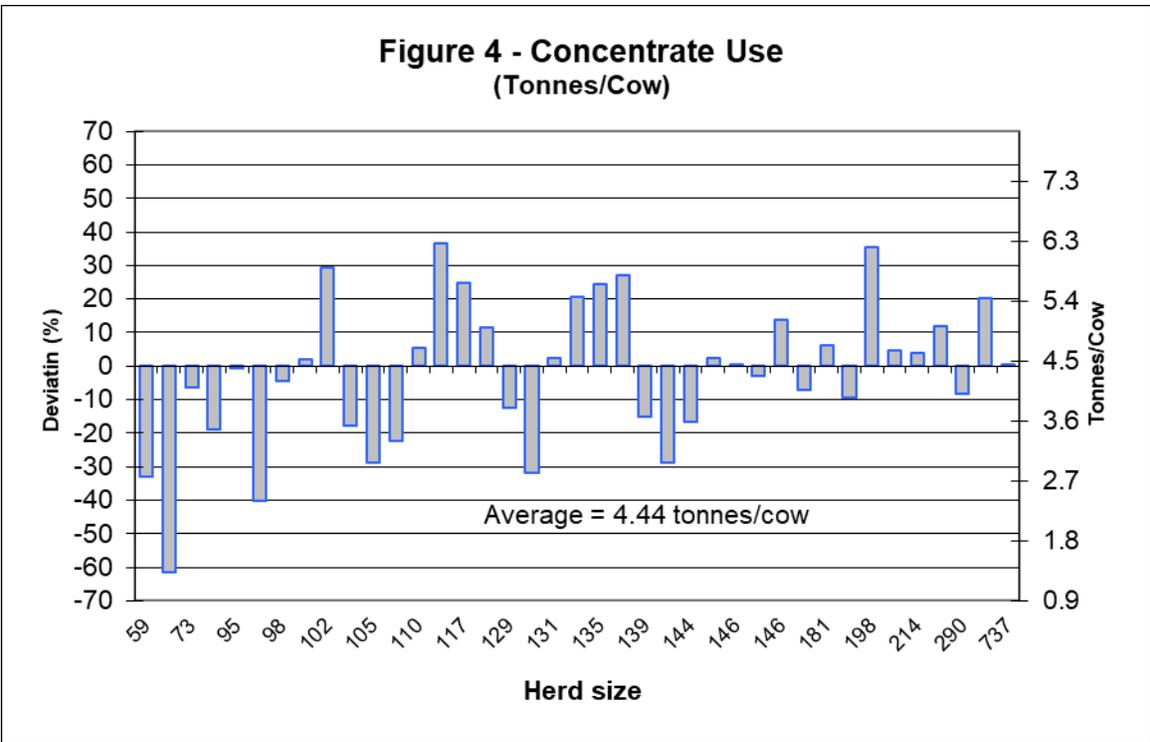
**Figure 2 - Milk Production (Litres/Cow)**

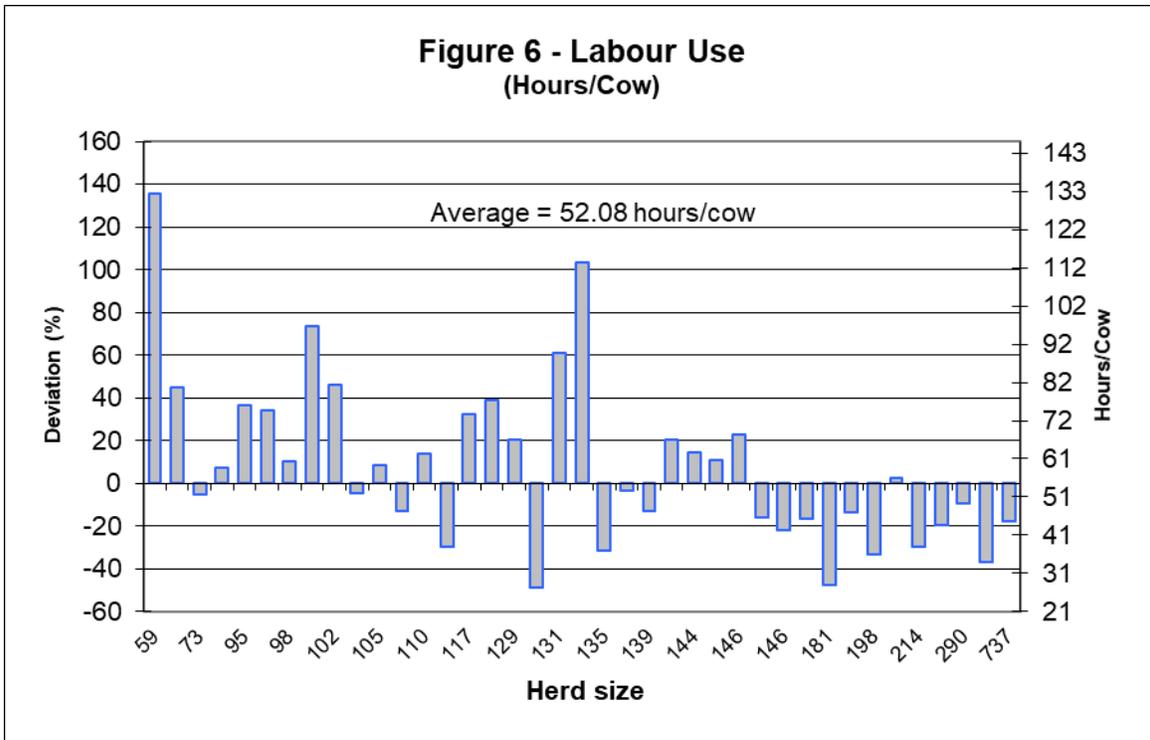
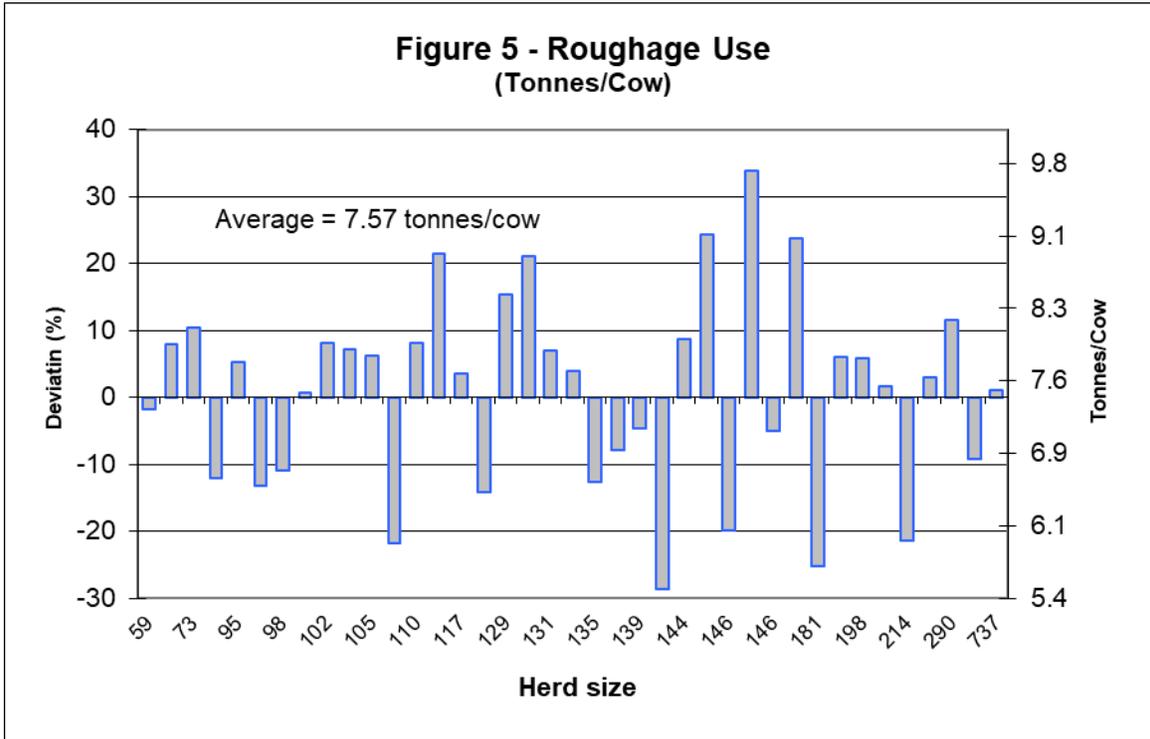


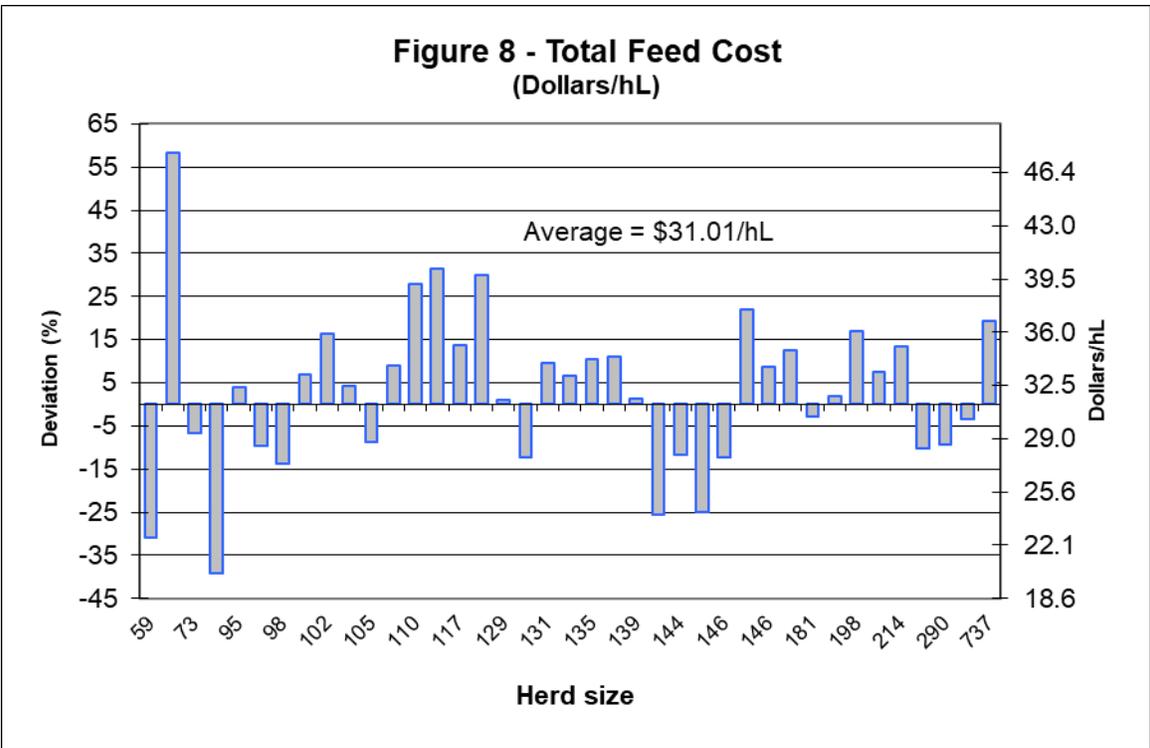
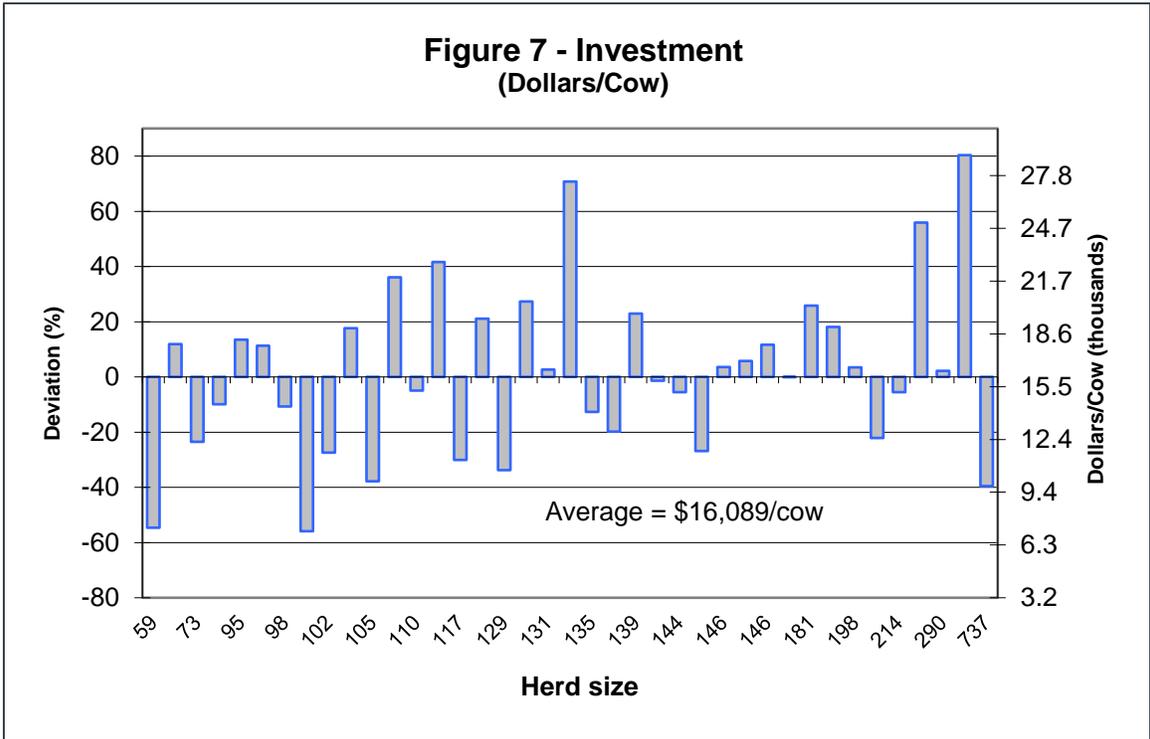
**Figure 3 - Cost of Production  
(Dollars/hL)**



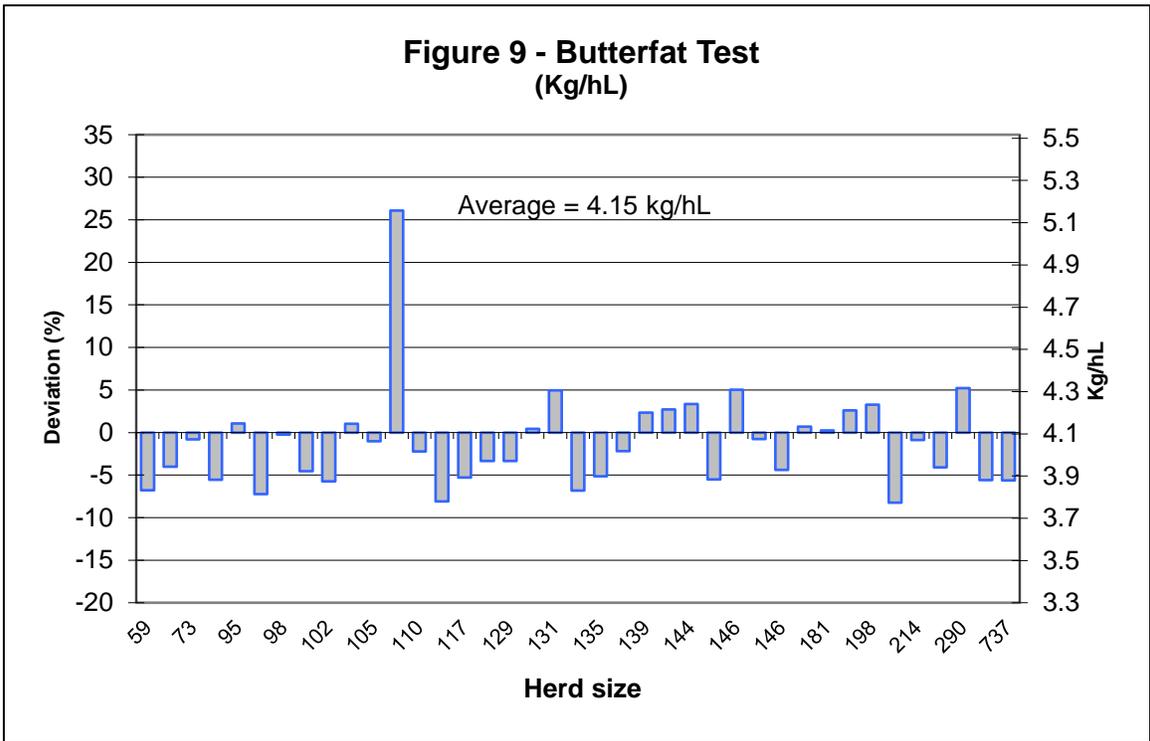
**Figure 4 - Concentrate Use  
(Tonnes/Cow)**







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





# Appendix F

## 2017 Dairy Cost Study

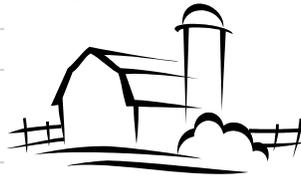
### Data Collection Forms



# DAIRY COST STUDY, 2017

Confidential

## Investments and Liabilities



### General Information

Contact Name:	TPQ Holdings kg/day: (January 2017)
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			% to Dairy	% to Other Farm
	Balance: Jan. 1, 2017	Interest Rate		
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 Section, Alberta Agriculture and Forestry, #300, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6 or phone: 780-422-3771

# DAIRY COST STUDY, 2017

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

## Supplies Inventory, Machinery and Buildings, January 1, 2017

Supplies Inventory		Value: Jan. 1, 2017	% 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					
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

<b>Dairy Equipment:</b>				
3				
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, 2017

## 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	Purchases		No.	Died or	Sales		End
	No.	No.	Total Value	Born	Trans/Out	No.	Total Value	No.
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
Specify			(\$)		Other Farm
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)			
16. 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)	Ca	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 \***

			Total Hours
1	Operator		
2	Wife, Partner, 2nd Operator		
3	Family Labour	16 yrs and Over	
4		Under 16	
5	Hired Labour	1	
5		2	

Wages & Board

\* do not include hours doing fieldwork

**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

