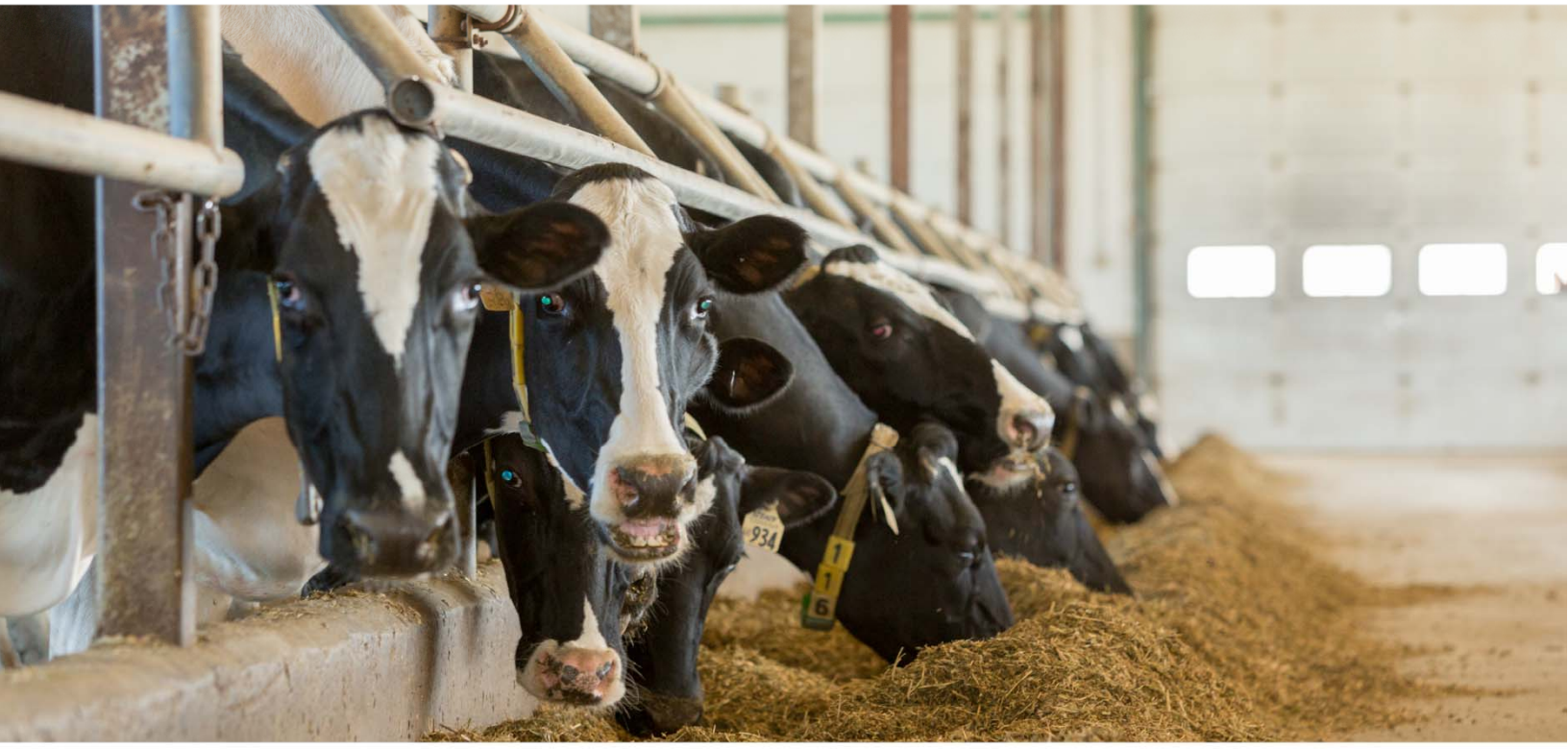
Economics of Milk Production in Alberta, 2018

The Dairy Cost Study



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

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Acknowledgments

We acknowledge and appreciate the participation of 40 milk producers in Alberta who provided detailed information for the 2018 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.

Assistance provided by Alberta Milk in providing milk statements and MNP for providing data from those producers participating on the national cost of production program is also gratefully acknowledged.

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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 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 comprise milk used for all dairy products such as cheese and yogurt. In 2018, 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) ensuring high quality milk production.

The Survey Group

Forty dairy producers across the province submitted monthly business information for the 2018 calendar year (approximately eight per cent of the 509 dairy producers in Alberta at the end of 2018). Two regional sub-groups were also identified as Northern Alberta (north of Ponoka) and Southern Alberta. Northern Alberta was represented by 15 producers while Southern Alberta had 25 participants complete the study.

The study is designed to represent a cross section of dairy farms by the size of their milk quota. Efforts are 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.

Table 1: 2018 Sample Characteristics

Years in Dairy	Total Sample	Indebtedness		Herd Size (# of cows)	
	%	<30%	≥30%	<75	≥75
<10	10	2	2	0	4
≥10	90	25	11	2	34
Total (%)	**100**	**67**	**33**	**5**	**95**

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 homegrown 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.

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 homegrown inputs, just as if they were purchased from the cropping enterprise. The total value of homegrown feed is determined by multiplying the regional value or price by the actual quantity fed. This procedure

adequately compensates for the production cost of homegrown 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 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 third are the highest cost producers and the top third the lowest cost producers.

The total cost for the top third group was 27 per cent or $25.65 per hectolitre (hL) lower than the bottom third, and 14 per cent lower than the provincial average. The categories most affecting this gap are: total feed costs, labour and variable costs (which includes costs for vet/medicine, repairs and utilities). See tables 5-10 for further breakdown of top and bottom third by different categories.

Table 3 compares the average costs and returns for 2017 and 2018. In 2018 the total cost of producing a hectolitre of milk was $79.82. This is an increase of $4.51 per hectolitre or almost six per cent from 2017. Some of the drivers behind this increase are:

- Total feed costs in 2018 comprised about 41 per cent of the total cost of production, up from 35 per cent in 2017. There was an unprecedented increase in hay prices. Farmers look to other feed sources and subsequently cost of silage and green feed were also higher.
- According to Farm Input Prices[1], electricity (farm use) increased by 39 per cent from average $3.80/kwh in 2017 to $6.22/kwh in 2018, causing an increase in utilities expense.
- Interprovincial hauling fees came into effect starting September 1, 2018.
- Bedding became more expensive as sawdust in the North region became hard to source.

Demand for milk remained high throughout 2018 and remains positive. Herd size has increased and average milk production per cow reaches an all-time high. Investment per cow remains stable. Return to equity decreased significantly as costs increased and milk price remained fairly constant.

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

[1] Source: Statistics and Data Development Section, Alberta Agriculture and Forestry

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
Gross Income	**83.99**	**84.74**	**84.40**
Feed Cost	40.21	35.45	31.42
Grain	6.44	5.14	4.04
Complete Feed	9.59	12.02	11.22
Roughage	16.37	12.91	12.13
Labour Costs	17.67	12.08	10.31
Other Variable Costs	23.96	20.24	17.98
Depreciation	10.91	8.93	8.15
Other Capital Costs	3.23	3.12	2.47
Total Production Costs	**95.98**	**79.82**	**70.33**
Total Cash Costs	70.37	62.32	54.55
Gross Margin	**13.62**	**22.42**	**29.85**
Contribution Margin	**2.15**	**16.97**	**24.69**
Return to Investment	**(10.63)**	**6.36**	**15.08**
Return to Equity	**(11.99)**	**4.92**	**14.07**
Return to Investment (%)	**(4.0)**	**3.7**	**10.8**
Return to Equity (%)	**(7.9)**	**3.8**	**12.8**

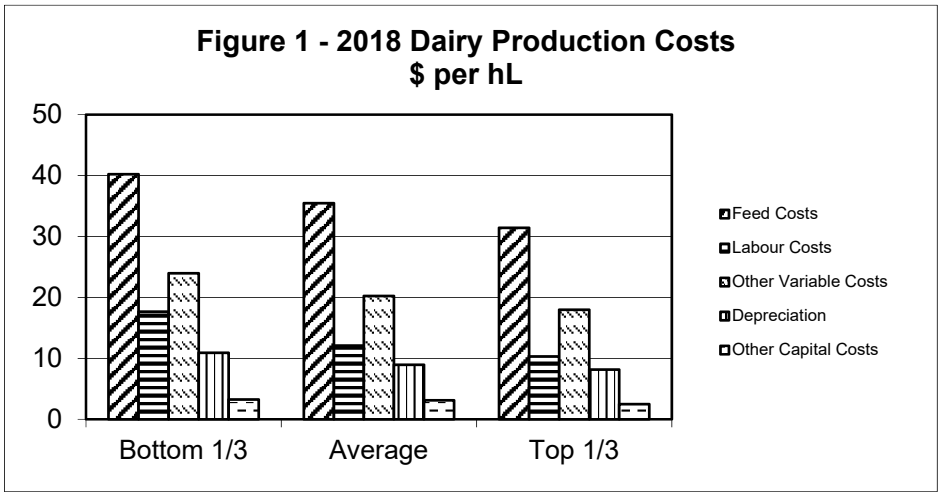


Table 3: Dairy Enterprise Costs and Returns - $ Per hL Sold
2 Year Comparison - 2017 and 2018

	2017 (39 producers)	2018 (40 producers)
Milk Sales	79.57	79.32
Gross Income	**86.80**	**84.74**
Feed Costs	31.01	35.45
Grain	4.22	5.14
Complete Feed	11.54	12.02
Roughage	10.22	12.91
Labour Costs	12.19	12.08
Other Variable Costs	19.72	20.24
Depreciation	8.97	8.93
Other Capital Costs	3.42	3.12
Total Production Costs	**75.32**	**79.82**
Total Cash Costs	57.85	62.32
Gross Margin	**28.95**	**22.42**
Contribution Margin	**23.88**	**16.97**
Return to Investment	**12.90**	**6.36**
Return to Equity	**11.49**	**4.92**
Return to Investment (%)	**7.4**	**3.7**
Return to Equity (%)	**8.8**	**3.8**

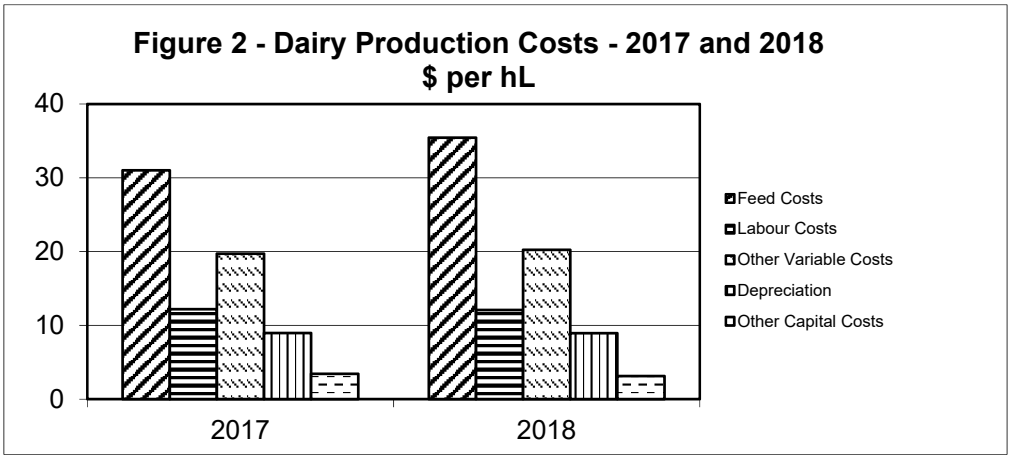
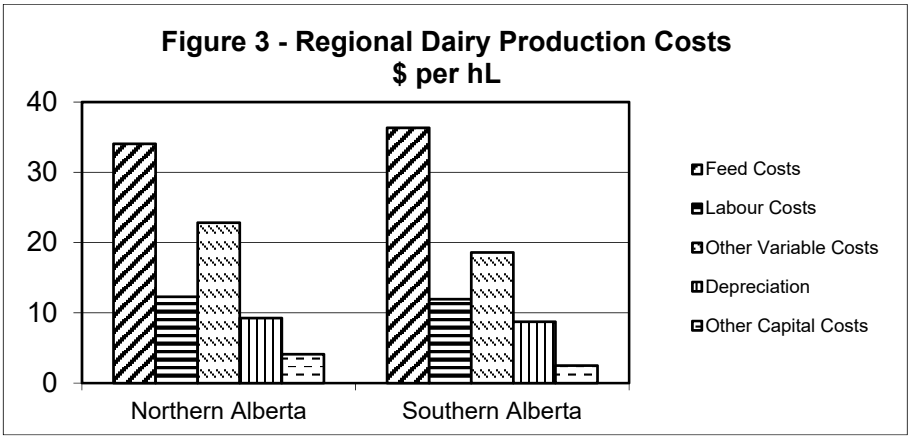


Table 4: Average Dairy Enterprise Costs and Returns - $ Per hL Sold
Northern and Southern Alberta

	North (15 producers)	South (25 producers)
Milk Sales	79.65	79.11
Gross Income	**87.80**	**82.81**
Feed Costs	34.05	36.34
Grain	6.39	4.35
Complete Feed	10.24	13.14
Roughage	11.63	13.71
Labour Cost	12.29	11.95
Other Variable Costs	22.84	18.60
Depreciation	9.25	8.72
Other Capital Costs	4.10	2.49
Total Production Costs	**82.53**	**78.11**
Total Cash Costs	66.95	59.40
Gross Margin	**20.85**	23.40
Contribution Margin	**18.62**	**15.92**
Return to Investment	**7.16**	**5.84**
Return to Equity	**5.27**	**4.70**
Return to Investment (%)	**3.9**	**3.6**
Return to Equity (%)	**4.3**	**3.6**



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 per cent moisture and haylage at 56 per cent 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

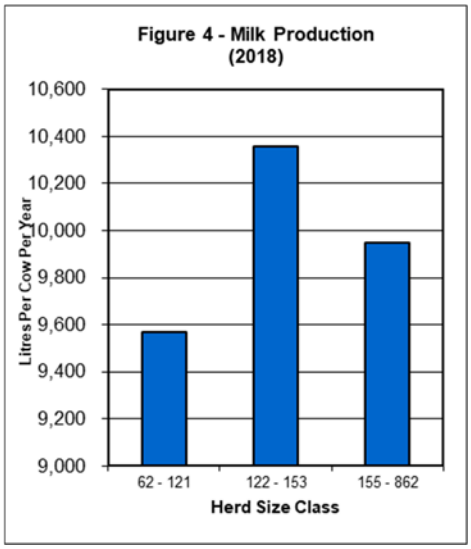
Herd size ranged from 62 to 862 milking cows. For this analysis, the sample group was split into the following three size classes:

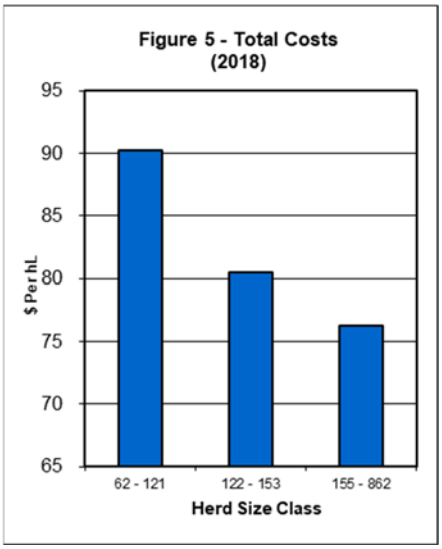
Bottom 1/3: 62 – 121 Middle 1/3: 122 – 153 Top 1/3: 155 - 862

Table 5 - Dairy Enterprise Characteristics by Herd Size Class

	Bottom 1/3 62 - 121	Middle 1/3 122 - 153	Top 1/3 155 - 862
Years in Dairy	31.69	22.18	29.31
Milk Production (litres/yr)	**9,567.90**	**10,357.17**	**9,948.38**
Home Grown Feed (%)	63.9	76.9	76.5
Butterfat Test (kg/hL)	4.14	4.27	4.14
Gross Income ($/hL)	83.29	84.43	85.71
Total Costs ($/hL)	**90.23**	**80.47**	**76.24**
Feed Costs ($/hL)	34.94	35.84	35.92
Labour (hrs/cow)	76.54	53.06	45.32
Investment ($/cow)	14,164.39	19,770.61	15,851.17
Return to Equity (%)	(2.3)	3.7	7.5
Return to Investment (%)	(0.3)	2.2	6.1
Debt/Capital Ratio	0.19	0.26	0.16

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

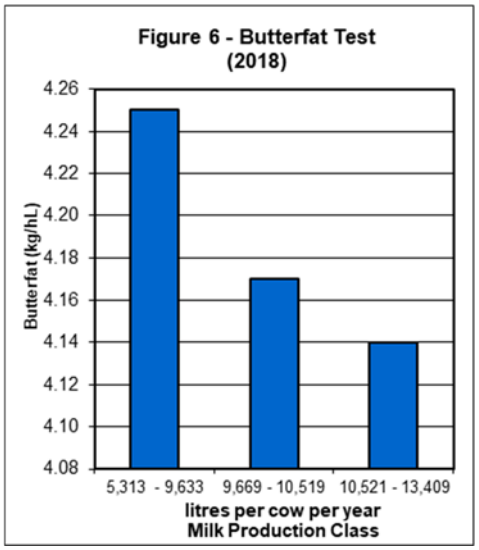
Milk production ranged between 5,313 and 13,409 litres per cow per year. For this analysis, the sample group was split into the following three classes:

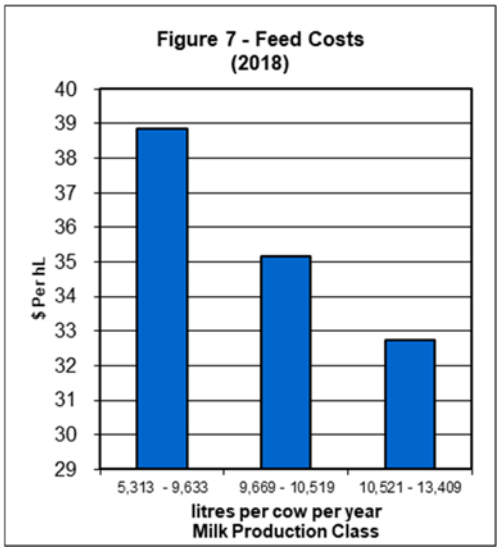
Bottom 1/3: 5,313 – 9,633 Middle 1/3: 9,669 – 10,519 Top 1/3: 10,521 – 13,409

Table 6 - Dairy Enterprise by Milk Production Class

	Bottom 1/3 5,313 - 9,633	Middle 1/3 9,669 - 10,519	Top 1/3 10,521- 13,409
Years in Dairy	25.38	26.11	31.38
Herd Size	194	162	151
Home Grown Feed (%)	71.9	80.4	64.7
Butterfat Test (kg/hL)	**4.25**	**4.17**	**4.14**
Gross Income ($/hL)	86.24	83.74	83.51
Total Costs ($/hL)	90.01	81.38	75.48
Feed Costs ($/hL)	**38.84**	**35.17**	**32.74**
Labour (hrs/cow)	53.88	63.66	56.65
Investment ($/cow)	16,225.70	16,073.18	17,771.70
Return to Equity (%)	(1.2)	2.1	8.2
Return to Investment (%)	0.1	1.4	6.5
Debt/Capital Ratio	0.22	0.21	0.19

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

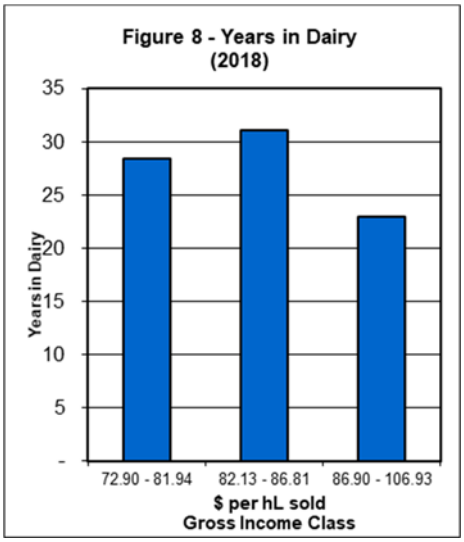
Gross income ranged between $72.90 and $106.93 per hectoliter sold. For this analysis, the sample group was split into the following three classes:

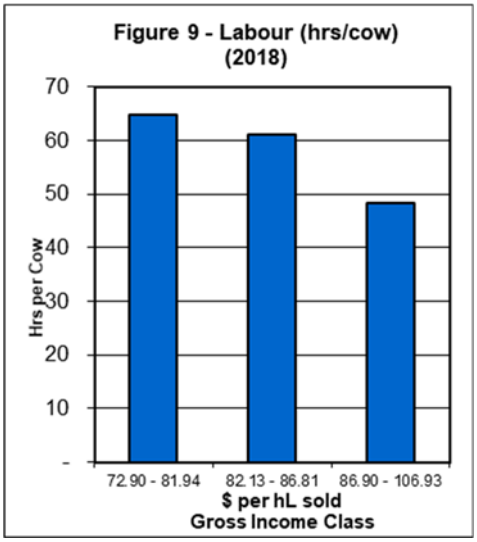
Bottom 1/3: 72.90 – 81.94 Middle 1/3: 82.13 – 86.81 Top 1/3: 86.90 – 106.93

Table 7 - Dairy Enterprise by Gross Income Class

	Bottom 1/3	Middle 1/3	Top 1/3
	72.90 - 81.94	82.13 - 86.81	86.90 - 106.93
Years in Dairy	**28.46**	**31.07**	**22.96**
Herd Size	163	131	216
Milk Production (litres/yr)	10,592.84	9,633.89	9,702.36
Home Grown Feed (%)	73.9	77.6	65.6
Butterfat Test (kg/hL)	4.02	4.17	4.36
Total Costs ($/hL)	82.21	82.10	82.50
Feed Costs($/hL)	36.46	36.04	34.19
Labour (hrs/cow)	**64.83**	**61.05**	**48.43**
Investment ($/cow)	18,455.40	14,175.43	17,585.73
Return to Equity (%)	(0.6)	5.5	4.0
Return to Investment (%)	(1.0)	4.4	4.4
Debt/Capital Ratio	0.24	0.09	0.29

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

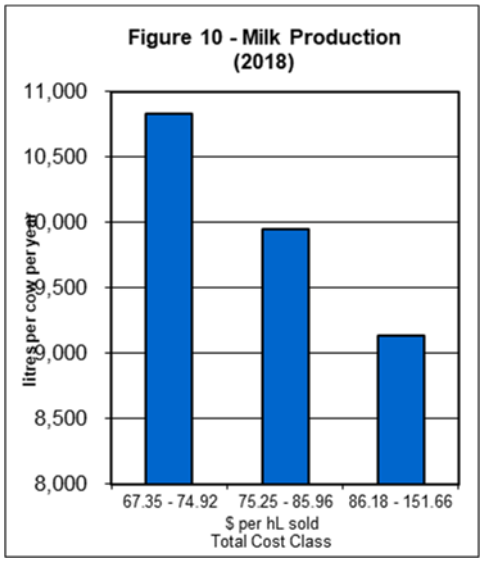
Total cost ranged between $67.35 and $151.66 per hectoliter sold. For this analysis, the sample group was split into the following three classes:

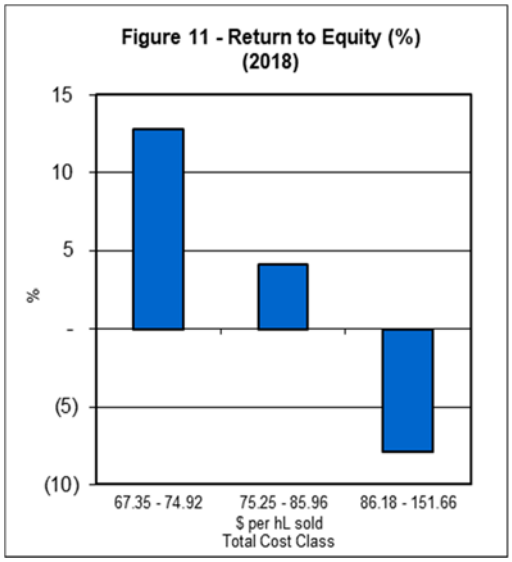
Top 1/3: 67.35 – 74.92 Middle 1/3: 75.25 – 85.96 Bottom 1/3: 86.18 – 151.66

Table 8 - Dairy Enterprise by Total Cost Class

	Top 1/3	Middle 1/3	Bottom 1/3
	67.35 - 74.92	75.25 - 85.96	86.18 - 151.66
Years in Dairy	30.04	23.32	29.73
Herd Size	168	165	174
Milk Production (litres/yr)	**10,828.88**	**9,945.25**	**9,131.02**
Home Grown Feed (%)	74.7	81.4	60.8
Butterfat Test (kg/hL)	4.17	4.21	4.18
Gross Income ($/hL)	84.40	84.99	83.99
Feed Costs ($/hL)	31.42	35.12	40.21
Labour (hrs/cow)	49.19	60.17	65.01
Investment ($/cow)	15,816.42	16,993.80	17,189.53
Return to Equity (%)	**12.8**	**4.1**	**(7.9)**
Return to Investment (%)	10.2	2.4	(4.6)
Debt/Capital Ratio	0.18	0.22	0.21

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

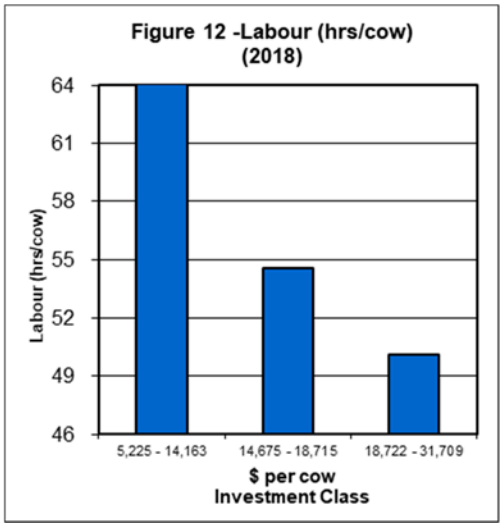
Investment per cow ranged between $5,225 and $31,709. For this analysis, the sample group was split into the following three classes:

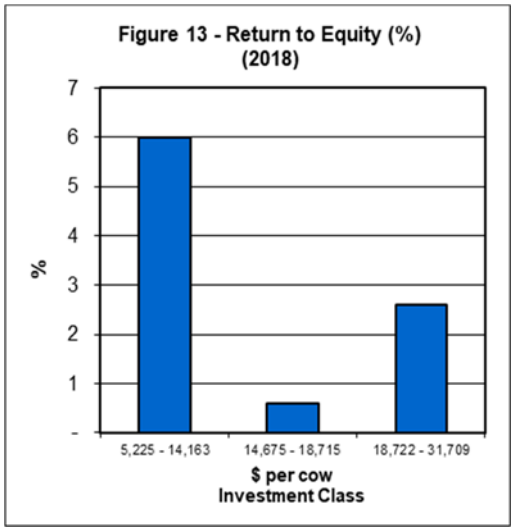
Bottom 1/3: 5,225 – 14,163 Middle 1/3: 14,675 – 18,715 Top 1/3: 18,722 – 31,709

Table 9 - Dairy Enterprise by Investment Class

	Bottom 1/3	Middle 1/3	Top 1/3
	5,225 - 14,163	14,675 - 18,715	18,722 - 31,709
Years in Dairy	29.38	28.50	24.81
Herd Size	186	156	165
Milk Production (litres/yr)	9,658.04	10,162.98	10,067.38
Home Grown Feed (%)	69.7	73.0	74.9
Butterfat Test (kg/hL)	4.08	4.24	4.23
Gross Income ($/hL)	83.91	85.00	84.47
Total Costs ($/hL)	79.10	81.59	86.17
Feed Costs ($/hL)	33.87	37.06	35.66
Labour (hrs/cow)	**70.14**	**54.56**	**50.11**
Return to Equity (%)	**6.0**	**0.6**	**2.6**
Return to Investment (%)	4.9	2.2	0.9
Debt/Capital Ratio	0.10	0.20	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

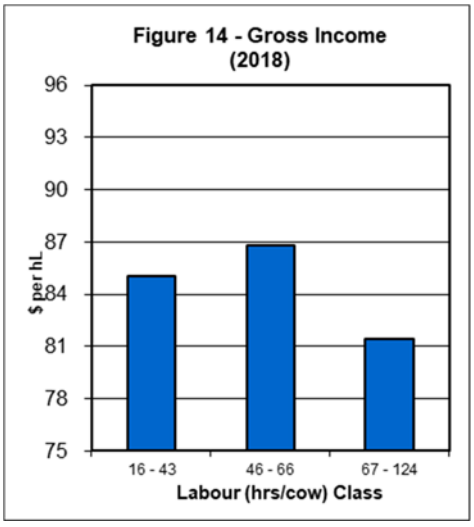
Labour (hrs/cow) ranged between 16 and 124. For this analysis, the sample group was split into the following three classes:

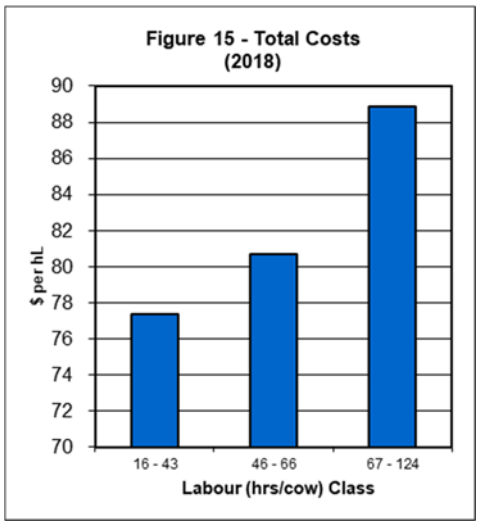
Bottom 1/3: 16 – 43 Middle 1/3: 46 – 66 Top 1/3: 67 – 124

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

	Bottom 1/3	Middle 1/3	Top 1/3
	16 - 43	46 - 66	67 - 124
Years in Dairy	26.69	26.36	29.81
Herd Size	200	193	112
Milk Production (litres/yr)	10,096.94	9,748.11	10,075.27
Home Grown Feed (%)	89.2	65.2	63.7
Butterfat Test (kg/hL)	4.28	4.18	4.10
Gross Income ($/hL)	**85.03**	**86.80**	**81.41**
Total Costs ($/hL)	**77.37**	**80.68**	**88.87**
Feed Costs ($/hL)	37.51	33.74	35.61
Investment ($/cow)	19,833.30	14,957.08	15,366.04
Return to Equity (%)	5.8	4.3	(1.1)
Return to Investment (%)	4.1	4.3	(0.6)
Debt/Capital Ratio	0.25	0.26	0.09

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).





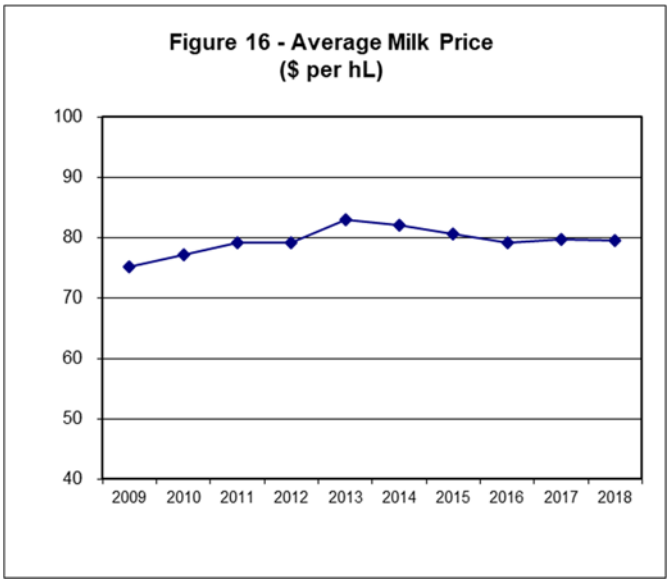
Detailed Management Factors

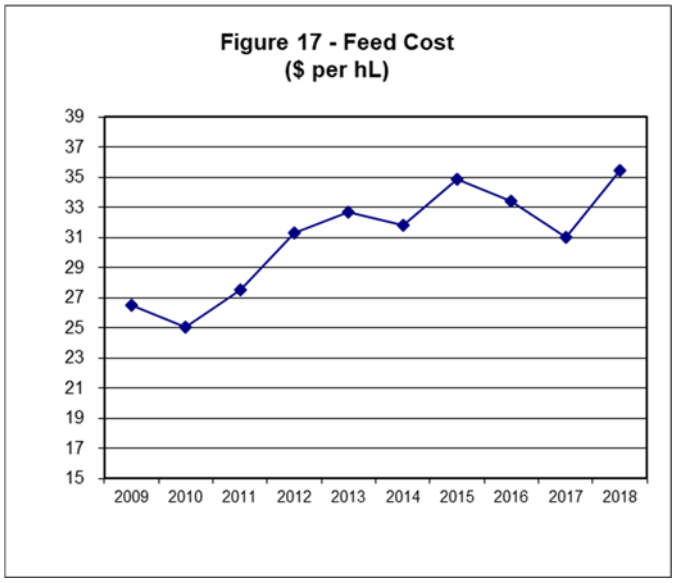
Table 11 provides a further examination of regional differences from a management perspective.

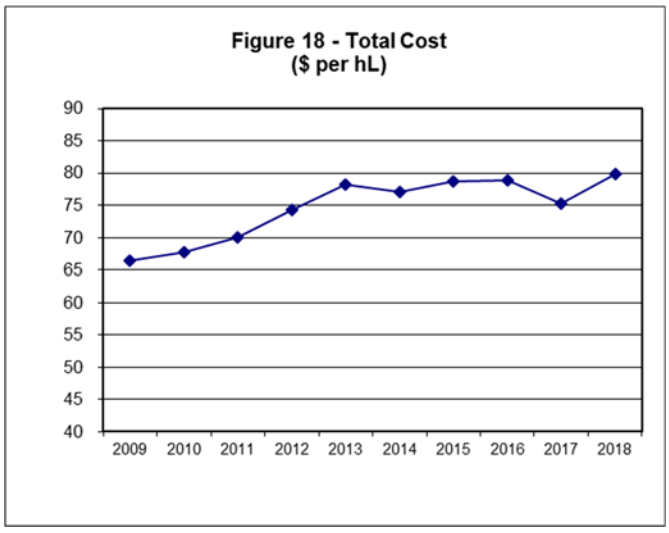
Table 11: Detailed Management Factors, Northern and Southern Alberta, 2018

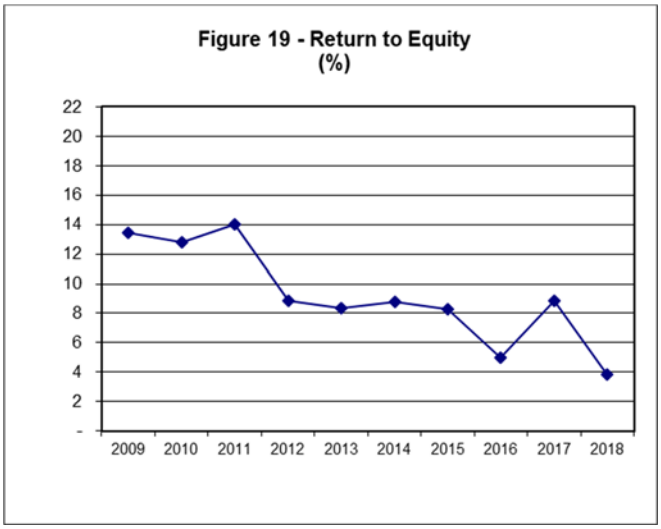
	Northern Alberta	Southern Alberta
Herd Size	197	152
Milk Production (litres/cow/year)	8,709.85	10,637.1
Feed Conversion (litres/kg concentrates)	1.90	2.31
Labour Productivity (litres/hr)	188.50	187.78
Labour Hours/Cow (hrs)	46.21	56.65
Investment/Cow ($/cow)	15,436.69	17,051.59
Milk Production/$ Invest (litres/$)	0.56	0.62
Feed Costs ($/cow)	2,872.17	3,774.05
Purchased Barley ($/tonne)	202.50	222.29
Cost of Purchased Hay ($/tonne)	177.55	183.20
Home Grown Roughage (%)	62.2	71.4
Butterfat Test (kg/hL)	4.25	4.15
Protein (kg/hL)	3.32	3.28
LOS (kg/hL)	5.77	5.76
Total Costs ($/hL)	82.53	78.11
Contribution Margin ($/hL)	18.62	15.92
Return to Investment (%)	3.9	3.6
Return to Equity ($/hL)	5.27	4.70
Return to Equity (%)	4.3	3.6
Debt to Capital Ratio	0.33	0.19

Historical Economic Trends









Historical Economic Trends

Figure 20 - Median Size of Dairy Herd

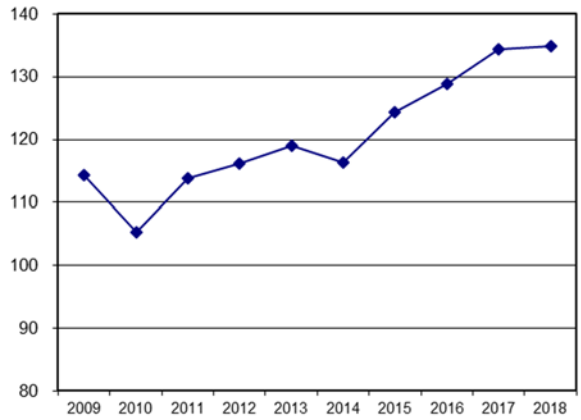


Figure 21 - Milk Production (litres/cow per year)

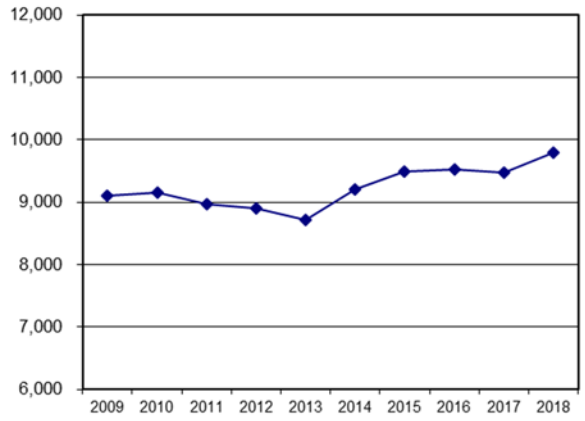


Figure 22 - Purchased Barley Cost ($ per tonne)

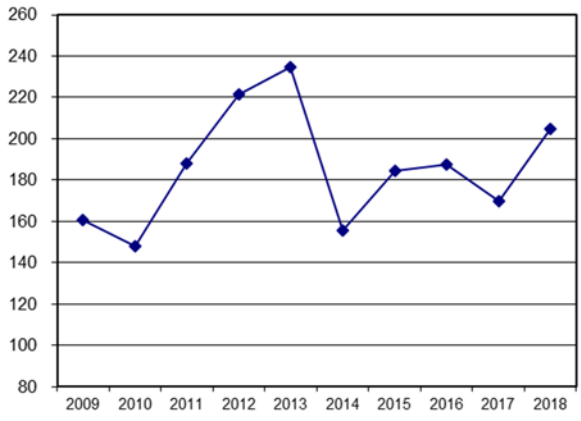
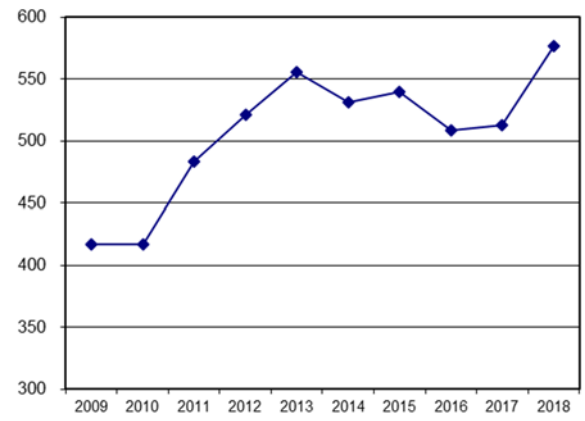


Figure 23 - Cost of Dairy Ration ($ per tonne)

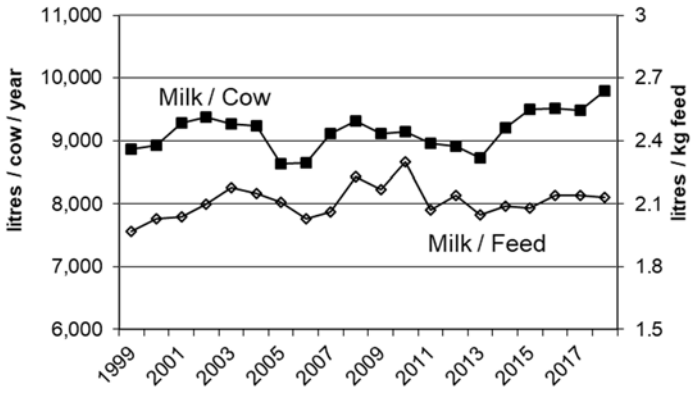


Milk Productivity Factors

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. Increased consumer demand for dairy products began in 2014 and has remained positive. Producers have responded to this demand with milk production at a record high at an average of 9,794 litres/cow/year in 2018. Farmers are concentrating on cow health and comfort to increase productivity.

Figure 24 - Animal and Feed Productivity



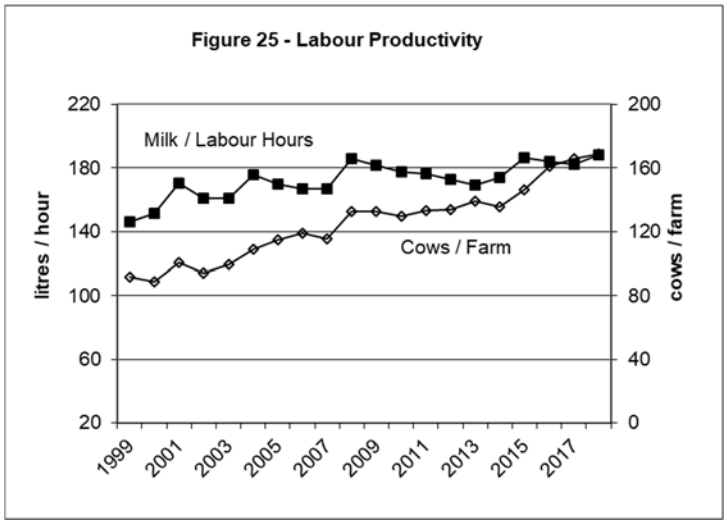
Consumption of fluid milk is holding steady with increases shown in cheese and yogurt. Butter demand is still expanding. With this growth comes the demand for higher butterfat content in milk produced. The average butterfat content in 2018 was 4.19 kgs per hectolitre. In 2018, dairy farmers were issued a minimal quota increase and a total of nine incentive days[2] to encourage and enable increased milk production.

The feed conversion rates (or productivity) have varied over time. Historically, 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.

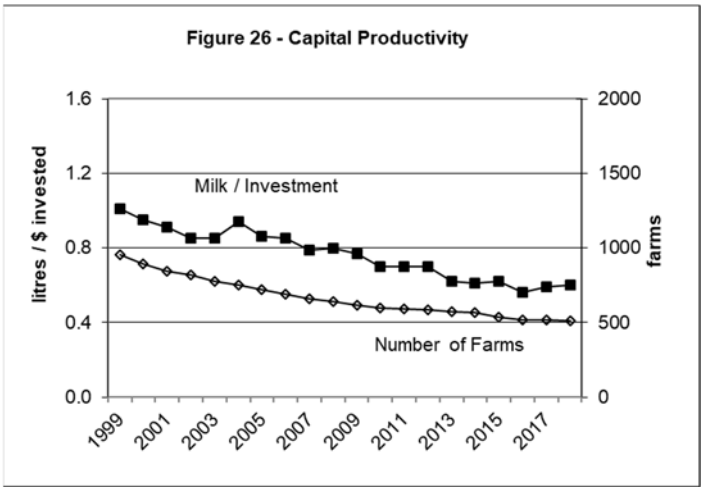
Figure 25 shows the amount of milk produced for each hour of labour on dairy farms. Through the years spanning 1998 to 2007 there was a matching increase in labour productivity to

[2] 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.

increases in herd size, coming to a peak in 2008. The levelling off period from 2008 to 2013 took the dairy industry through a period of time where farm labourers were hard to find. With the introduction of voluntary milking systems (VMS, also called milk robots) labour efficiency saw steady improvement since 2013. There is also an increase in family labour as children are getting older and staying on the farm. Herd size has also increased, showing employees were able to manage a larger number of dairy cows. In 2018, the average herd size increased slightly to an average of 169 cows though labour hours remained quite constant.



Capital investment has been fairly steady since 2009 with only a slight decline in 2012 and another in 2016. This could be due to the uncertainty in the world trade environment during these years. With the continued demand for milk, showing no change in the near future, investment seems to be on the rise. There are less farms needing to produce high volumes of milk to meet the consumer demand and advancements in technology and efficiencies are crucial.

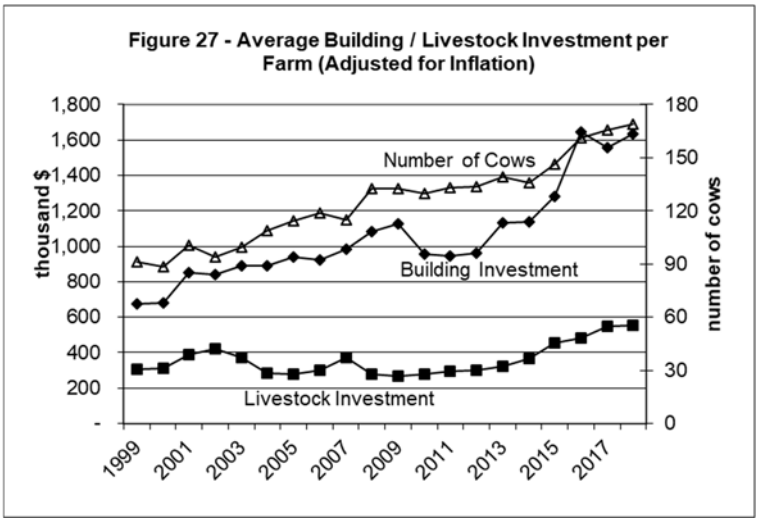


Capital Investment Trends

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 2009. It is then that it remained relatively flat until the period from 2013 to 2016 when there is a dramatic change in

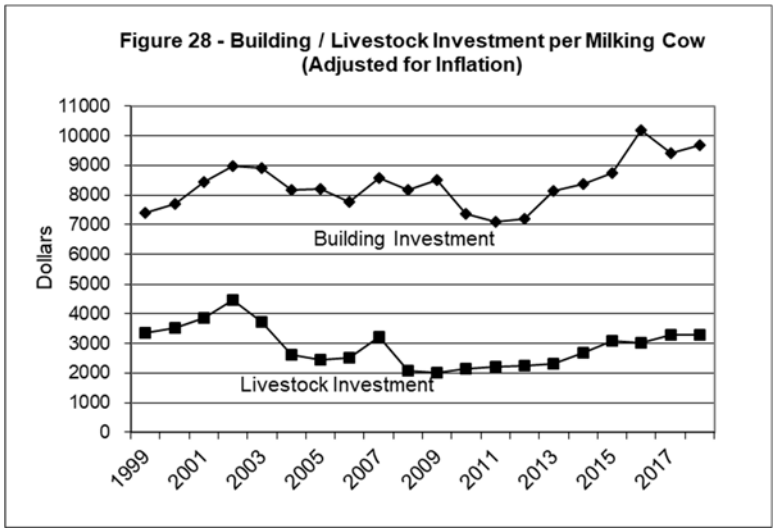
herd size and investment in facilities. As herd sizes continued to grow and the use of voluntary milking systems became more popular, there was the trend to build new barns or the need to renovate existing barns. As the herd size becomes larger total investment dollars are spread over more animals.



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 Bovine spongiform encephalopathy (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. Livestock values remain high as inventory is needed to meet quota requirements. Livestock values remain favourable through 2018.

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 2009. Increase in investment began in 2014 with the introduction of new technology.



Demand for milk remains high with no signs of change. Farmers are at the point of needing to invest in infrastructure in order to continue to increase production while keeping in mind cow comfort and health. The uncertainty of trade talks may have influenced the drop in investment in 2017. Even though there are less dairy producers in the province at 509 at the end of 2018, the industry has been successful in supplying the increased demand for milk production.

Investment and Debt Levels

Total dairy farm investment (excluding quota) was only slightly higher at $2,761,237 per farm in 2018, compared to an average of $2,664,208 in 2017. On a per cow basis, this works out to $16,343 (Table 12) which is only a slight increase from the previous year. Of this total investment amount, 73 per cent was comprised of buildings and equipment investments, 22 per cent referred to livestock investments, the remaining five per cent was invested in land and supplies.

Table 12

Annual Investment and Debt on Dairy Farms

	2016	2017	2018
	- - - $ Per Cow - - -		
Land	919	790	677
Buildings and Equipment	12,709	11,578	11,923
Livestock	3,314	3,624	3,637
Supplies	110	97	106
TOTAL	**17,052**	**16,089**	**16,343**
Debt	4,988	4,107	4,064
Equity	12,064	11,982	12,279
TOTAL	**17,052**	**16,089**	**16,343**

The debt/capital ratio measures the extent of external financing on dairy farms in Alberta. This ratio moved very slightly to 25 per cent in 2018, down from 26 per cent in 2017. This decrease reflects a positive environment where farmers are able to pay down debt. As herd size increases, investment per cow decreases.

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 2016, 2017 and 2018 is presented in Table 13.

Table 13

Summary of Average Costs and Returns in Alberta
2016 – 2018

	2016	2017	2018	2016-2018
		- - - - - - $ Per Cow - - - - - -		
A. Gross Income	7,934	8,006	8,079	8,006
B. Feed Costs	3,094	2,860	3,380	3,111
C. Variable Costs	2,980	2,943	3,082	3,002
Contribution Margin (A - B - C)	1,860	2,203	1,617	1,893

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 2016 and 2018. An assumption behind the analysis is that feed costs vary directly with the level of production and market values. Unprecedented high hay prices were experienced in 2018. With hay being so expensive, farmers looked to alternatives such as silage and greenfeed. This demand pushed up the prices for these feed stuffs. Table 13 demonstrates the increase in feed costs. Total feed costs per cow increased by 13 per cent from 2017 and comprise just over 41 per cent of total production costs.

Table 14

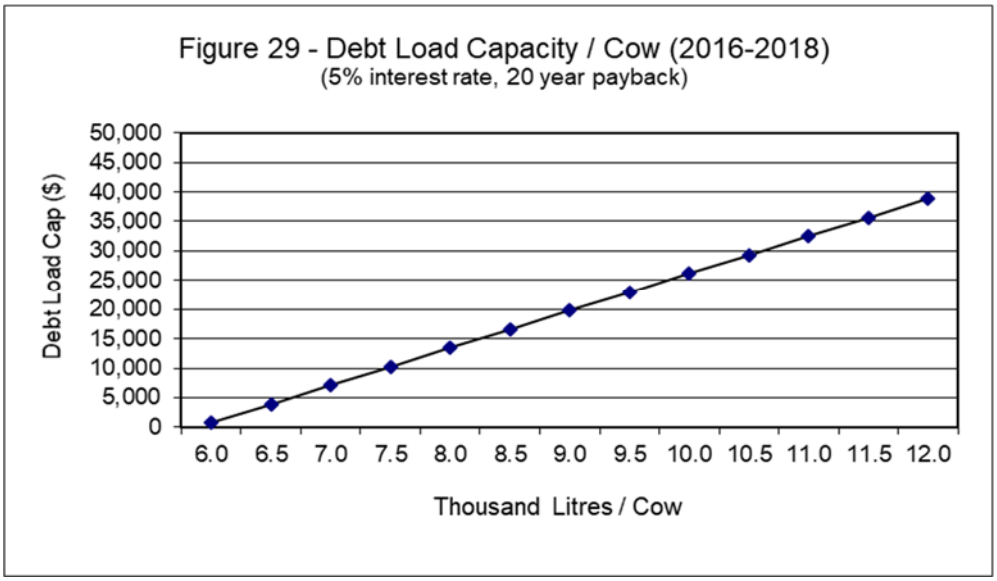
Acceptable Total Debt-Load per Cow in Alberta, 2016-2018

Milk Productivity (litres/cow)	Interest Rates 3%	4%	5%	6%	7%	8%
6000	838	765	702	646	597	553
6500	4,629	4,228	3,877	3,569	3,296	3,055
7000	8,420	7,691	7,053	6,491	5,996	5,556
7500	12,211	11,154	10,228	9,414	8,695	8,058
8000	16,002	14,617	13,404	12,337	11,395	10,560
8500	19,793	18,080	16,579	15,259	14,094	13,062
9000	23,584	21,543	19,755	18,182	16,794	15,564
9500	27,375	25,006	22,931	21,105	19,493	18,065
10000	31,166	28,469	26,106	24,027	22,193	20,567
10500	34,957	31,932	29,282	26,950	24,892	23,069
11000	38,748	35,395	32,457	29,873	27,592	25,571
11500	42,539	38,858	35,633	32,796	30,291	28,073
12000	46,330	42,321	38,808	35,718	32,991	30,575

* With a 20 year repayment period

For example, at a milk production level of 9,794 litres per cow (which is close to the average litres/cow in 2018), the contribution margin would be $1,967 per cow. This margin, if amortized over 20 years at five per cent interest, results in a debt carrying capacity of $24,518 per cow (half way between 9,500 and 10,000 litres/cow in the above table).

Figure 29 shows the impact of milk productivity on the debt load carrying capacity of dairy enterprises given an interest rate of five 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 five per cent, this amount of debt per cow would be supported at production levels of about 9,000 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 $41,081 per cow[3] is added to the current debt of $4,064 per cow which would mean the total amount of debt load per cow would be $45,145. 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 upwards of 12,000 litres per cow, assuming an interest rate of five per cent. With the 10 per cent increase in quota prices between 2017 and 2018, required production levels remain between 11,500 and 12,000 litres/cow even though the average interest rate in 2018 was 3.4 per cent. Figure 29 gives a target production level, however, producer payment is based on components (butterfat, protein, other solids) and not volume (see page 39).

[3] The average value of quota for one cow in the 2018 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 are taken into account (at the 2018 Dairy Cost Study average quota price), the average rate of return for new entrants would be a negative 7.4 (Table 15). This means that the borrowing costs of capital used to purchase all the necessary quota in 2018 exceeded the financial returns obtained from producing milk. The assumption in this analysis was that all funds needed to purchase quota were borrowed. Dairy farmers are making use of the monthly credit transfer mechanism, where quota credits can be purchased on a per month basis, to manage production levels rather than purchasing quota.

Table 15: Impact of Quota Value on Dairy Returns, 2018

	2018 Study Average	Including Quota Value*
	- - - $ per Farm - - -	
Dairy Investment	2,761,237	9,701,987
Debt	686,579	7,627,329
Equity	2,074,658	2,074,658
	- - - $ per hL Sold - - -	
Equity	128.80	128.80
Gross Income	84.74	84.74
Production Costs	79.82	79.82
Interest Cost for Quota		14.48
Potential Total Cost	79.82	94.3
Return to Equity($ per hL)	4.92	(9.56)
Return to Equity (%)	3.8	(7.4)

*Applicable to new entrants who borrow 100 per cent of funds needed to purchase total production quota at the average value from the 2018 Dairy Cost Study of $41,081 per kg/day.

Appendix A
2018 Dairy Cost Study Alberta Average

Alberta
2018 Dairy Cost Study - Business Analysis
40 Participants
Table 1 Dairy Enterprise Costs and Returns

	TOTAL ENTERPRISE	PER COW	PER HL SOLD	PERCENT FROM INCOME
INCOME:				
MILK SALES	1,277,643.56	7,561.79	79.32	
POOL ADJUSTMENTS (+ -)	1,511.22	8.94	.09	
MISCELLANEOUS RECEIPTS	6,626.17	39.22	.41	
NET CATTLE SALES (+ -)	53,004.02	313.71	3.29	
NET INVENTORY CHANGE (+ -)	26,206.71	155.11	1.63	
GROSS INCOME - - - - - - - - - - - - - - -	**1,364,991.69**	**8,078.77**	**84.74**	**100.00**
EXPENSES:				
GRAIN	82,769.32	489.87	5.14	
COMPLETE FEED	193,536.28	1,145.45	12.02	
SUPPLEMENT	61,973.41	366.79	3.85	
MINERALS & VITAMINS	19,502.02	115.42	1.21	
ROUGHAGE	207,932.20	1,230.66	12.91	
PROCESSING COSTS	5,325.90	31.52	.33	
TOTAL FEED COSTS - - - - - - - - - - - -	**571,039.13**	**3,379.72**	**35.45**	**41.83**
BEDDING AND SUPPLIES	52,107.57	308.40	3.23	
BREEDING	16,731.94	99.03	1.04	
VET. AND MEDICINE	31,073.60	183.91	1.93	
MILK HAULING	57,109.94	338.01	3.55	
PRODUCER'S FEES	35,579.31	210.58	2.21	
UTILITIES	26,936.48	159.42	1.67	
FUEL, OIL, LUBE	18,948.71	112.15	1.18	
BLDG. & MACH. REPAIRS	38,074.57	225.35	2.36	
MISCELLANEOUS	49,474.19	292.82	3.07	
TOTAL OTHER VARIABLE COSTS - - - -	**326,036.30**	**1,929.66**	**20.24**	**23.89**
HIRED LABOUR	56,608.69	335.04	3.51	
FAMILY LABOUR	138,020.58	816.88	8.57	
TOTAL LABOUR COSTS - - - - - - - - - - -	**194,629.27**	**1,151.92**	**12.08**	**14.26**
TOTAL VARIABLE COSTS	**1,091,704.69**	**6,461.30**	**67.78**	**79.98**
RENT	2,672.81	15.82	.17	
TAXES AND INSURANCE	24,469.98	144.83	1.52	
DEPRECIATION	143,764.76	850.88	8.93	
INTEREST (CAP.DEBT)	23,082.00	136.61	1.43	
TOTAL CAPITAL COSTS - - - - - - - - - -	**193,989.55**	**1,148.14**	**12.04**	**14.21**
TOTAL PRODUCTION COSTS	**1,285,694.24**	**7,609.44**	**79.82**	**94.19**
CONTRIBUTION MARGIN ($)	273,286.99	1,617.46	16.97	
RETURN TO EQUITY ($)	79,297.44	469.33	4.92	5.81
MILK PRICE			79.41	
INVENTORY ADJUSTMENT			5.33	
RETURN TO EQUITY (%)			3.82	
AVERAGE CAP. DEBT INTEREST RATE (%)			3.36	

Alberta
2018 Dairy Cost Study - Business Analysis
40 Participants
Table 2 Statement of Investment

LAND BUILDINGS & EQUIPMENT	AGE	DEPRECIATION	DAIRY INVESTMENT
DAIRY BUILDINGS	12.32	65,781.96	**1,635,570.28**
POWER MACHINERY	8.60	27,659.80	183,671.91
DAIRY EQUIPMENT	12.85	32,894.26	121,435.93
OTHER EQUIPMENT	9.59	17,428.75	73,818.73
TOTAL EQUIPMENT	**10.23**	**77,982.81**	**378,926.57**
LAND			114,310.50
SUPPLIES			17,979.45
** SUBTOTAL **		**143,764.76**	**2,146,786.79**

DAIRY LIVESTOCK	--- BEGIN YEAR --- NUMBER	VALUE	--- END OF YEAR --- NUMBER	VALUE	AVERAGE VALUE
COWS	166.60	399,937.16	171.68	412,120.12	406,028.64
BRED HEIFERS	49.35	98,700.00	55.08	110,150.00	104,425.00
OPEN HEIFERS	51.67	77,512.50	53.00	79,500.00	78,506.25
HEIFER CALVES	49.63	19,850.00	50.50	20,200.00	20,025.00
BULL CALVES	11.65	1,747.50	13.23	1,983.75	1,865.63
BULLS	2.40	3,600.00	2.40	3,600.00	3,600.00
** SUBTOTAL **	**331.30**	**601,347.16**	**345.88**	**627,553.87**	**614,450.51**

TOTAL DAIRY INVESTMENT	**2,761,237.31**
CAPITAL LOANS	686,578.90
OPERATOR EQUITY	2,074,658.41
INVESTMENT PER COW	16,342.51
DEBT/CAPITAL RATIO	.25
CAPITAL TURNOVER (YR)	2.02

HERD SIZE	Average	Median
NUMBER OF DAIRY COWS	168.96	134.92
NUMBER OF ANIMAL UNITS	264.65	206.92
DRY COWS (%)	19.69	
CALF CROP (%)	103.49	
PASTURE PER COW (AC.)	.19	

CATTLE SALES & PURCHASES	NUMBER SOLD	SELLING PRICE	NUMBER PURCHASED	PURCHASE PRICE
COWS	45.48	1,114.94	4.35	2,564.57
BRED HEIFERS	1.23	1,808.26	1.85	2,072.28
OPEN HEIFERS	5.15	1,341.72	.38	2,163.73
HEIFER CALVES	1.90	115.27	.30	350.00
BULL CALVES	52.05	206.06	.00	.00
BULLS	1.43	1,768.32	1.65	2,655.32
TOTAL VALUE		**73,291.30**		**20,287.28**

Alberta
2018 Dairy Cost Study - Business Analysis
40 Participants
Table 3 Labour and Management

LABOUR

	HOURS	VALUE	HOURLY RATE
OPERATOR LABOUR	3,280.43	72,169.35	22.00
HIRED LABOUR	2,465.27	56,608.69	22.96
FAMILY UNPAID LABOUR	3,053.94	65,851.23	21.56
TOTAL	**8,799.63**	**194,629.27**	**22.12**

RETURN TO FAMILY LABOUR	(1.72)
MAN EQUIVALENTS	3.52
LABOUR HOURS PER COW	52.08
YEARS FARMING	27.59

MILK PRODUCTION

	HL.	% OF TOTAL	VALUE	AVERAGE PRICE / HL
MILK SALES	16,107.72	97.34	1,277,643.56	79.32
OTHER MILK PRODUCED	441.02	2.66		
TOTAL	**16,548.73**	**100.00**		

		AVERAGE COMPONENT PRICES ($ / KG)
BUTTERFAT TEST	4.19 KG / HL	16.23
PROTEIN	3.29 KG / HL	2.41
L.O.S.	5.76 KG / HL	.68
MILK PRODUCTION PER COW	9,794.44 LITRES / YEAR	

QUOTA INFORMATION

TPQ HOLDINGS	177.64 KG / DAY
TPQ PRICE	39,072.07 $ / KG / DAY
CREDIT PRICE	8.66 $ / KG

MANAGEMENT FACTORS

COST PER HL	79.82
MILK/FEED (KG) RATIO	2.13 LITRES
MILK/LABOUR (HR) RATIO	188.06 LITRES
MILK/CAPITAL ($) RATIO	.60 LITRES

Alberta
2018 Dairy Cost Study - Business Analysis
40 Participants
Table 4 Feed Report

	--- PURCHASED ---		--- HOMEGROWN---	
CONCENTRATES	**QUANTITY (TONNES)**	**PRICE**	**QUANTITY (TONNES)**	**PRICE**
OATS	1.63	160.75	.00	.00
BARLEY	117.30	204.54	107.10	223.43
WHEAT	.08	233.41	4.91	220.06
MIXED GRAIN	.00	.00	.00	.00
BREW GRAIN (DRY EQ.)	9.30	298.61		
BEET PULP	6.84	270.93		
OTHER PURCHASED	74.80	385.77		
DAIRY RATION	300.06	576.33		
CALF FEED	21.35	591.80		
MILK REPLACER	2.36	3,369.99		
SUPPLEMENT	95.27	623.26		
MOLASSES	8.14	318.70		
SALT	1.43	646.46		
MINERALS & VITAMINS	26.19	709.28		
SUBTOTAL - - - - - - - - -	**664.77**	**332,772.78**	**112.00**	**25,008.25**
ROUGHAGE				
HAY (ALL VARIETIES)	200.85	181.59	110.56	198.22
ALFALFA PELLETS	.00	.00		
STRAW FED	16.35	57.79	32.15	76.93
GREENFEED	.34	100.00	2.60	163.24
SILAGE/HAYLAGE (DRY EQ.)	188.49	150.33	700.99	167.38
SUBTOTAL - - - - - - - - -	**406.02**	**65,785.14**	**846.29**	**142,147.06**
GRINDING & PROCESSING		5,325.90		
GRAND TOTAL FEED COSTS - - - - - - - - -		**403,883.82**		**167,155.31**
BEDDING	255.65	77.52	36.54	65.27

AV. PRICE:	CONCENTRATE	460.60	$/TONNE
	ROUGHAGE	166.04	$/TONNE
FED PER COW:	CONCENTRATE	4.60	TONNES
	ROUGHAGE	7.41	TONNES
% HOME GROWN:	CONCENTRATE	14.42	%
	ROUGHAGE	67.58	%

Appendix B
2018 Dairy Cost Study
Northern Alberta Average

Northern Alberta
2018 Dairy Cost Study - Business Analysis
15 Participants
Table 1 Dairy Enterprise Costs and Returns

	TOTAL ENTERPRISE	PER COW	PER HL SOLD	PERCENT FROM INCOME
INCOME:				
MILK SALES	1,323,627.29	6,718.92	79.65	
POOL ADJUSTMENTS (+ -)	1,513.15	7.68	.09	
MISCELLANEOUS RECEIPTS	8,234.27	41.80	.50	
NET CATTLE SALES (+ -)	89,032.44	451.94	5.36	
NET INVENTORY CHANGE (+ -)	36,688.79	186.24	2.21	
GROSS INCOME - - - - - - - - - - - - - - -	**1,459,095.94**	**7,406.58**	**87.80**	**100.00**
EXPENSES:				
GRAIN	106,176.12	538.97	6.39	
COMPLETE FEED	170,179.47	863.86	10.24	
SUPPLEMENT	67,672.85	343.52	4.07	
MINERALS & VITAMINS	14,827.92	75.27	.89	
ROUGHAGE	193,322.52	981.33	11.63	
PROCESSING COSTS	13,639.15	69.23	.82	
TOTAL FEED COSTS - - - - - - - - - - - -	**565,818.02**	**2,872.17**	**34.05**	**38.78**
BEDDING AND SUPPLIES	55,077.46	279.58	3.31	
BREEDING	20,565.69	104.39	1.24	
VET. AND MEDICINE	38,193.42	193.88	2.30	
MILK HAULING	58,789.53	298.42	3.54	
PRODUCER'S FEES	35,484.96	180.13	2.14	
UTILITIES	30,965.70	157.19	1.86	
FUEL, OIL, LUBE	18,911.76	96.00	1.14	
BLDG. & MACH. REPAIRS	50,033.38	253.98	3.01	
MISCELLANEOUS	71,483.29	362.86	4.30	
TOTAL OTHER VARIABLE COSTS - - - -	**379,505.19**	**1,926.42**	**22.84**	**26.01**
HIRED LABOUR	99,206.01	503.58	5.97	
FAMILY LABOUR	105,066.13	533.33	6.32	
TOTAL LABOUR COSTS - - - - - - - - - - -	**204,272.15**	**1,036.91**	**12.29**	**14.00**
TOTAL VARIABLE COSTS	**1,149,595.36**	**5,835.51**	**69.18**	**78.79**
RENT	5,462.99	27.73	.33	
TAXES AND INSURANCE	31,190.60	158.33	1.88	
DEPRECIATION	153,777.67	780.60	9.25	
INTEREST (CAP.DEBT)	31,477.71	159.79	1.89	
TOTAL CAPITAL COSTS - - - - - - - - - -	**221,908.96**	**1,126.44**	**13.35**	**15.21**
TOTAL PRODUCTION COSTS	**1,371,504.33**	**6,961.95**	**82.53**	**94.00**
CONTRIBUTION MARGIN ($)	309,500.58	1,571.07	18.62	
RETURN TO EQUITY ($)	87,591.61	444.63	5.27	6.00
MILK PRICE			79.74	
INVENTORY ADJUSTMENT			8.06	
RETURN TO EQUITY (%)			4.27	
AVERAGE CAP. DEBT INTEREST RATE (%)			3.18	

Northern Alberta
2018 Dairy Cost Study - Business Analysis
15 Participants
Table 2 Statement of Investment

LAND BUILDINGS & EQUIPMENT	AGE	DEPRECIATION	DAIRY INVESTMENT
DAIRY BUILDINGS	12.04	76,180.86	**1,889,891.81**
POWER MACHINERY	9.42	23,922.63	156,875.80
DAIRY EQUIPMENT	11.65	35,838.70	139,497.80
OTHER EQUIPMENT	8.83	17,835.48	77,806.67
TOTAL EQUIPMENT	**10.10**	**77,596.81**	**374,180.28**
LAND			92,013.33
SUPPLIES			19,331.76
** SUBTOTAL **		**153,777.67**	**2,375,417.19**

DAIRY LIVESTOCK	--- BEGIN YEAR --- NUMBER	VALUE	--- END OF YEAR --- NUMBER	VALUE	AVERAGE VALUE
COWS	190.87	433,349.72	197.33	448,031.84	440,690.78
BRED HEIFERS	50.53	101,066.67	61.80	123,600.00	112,333.33
OPEN HEIFERS	52.33	78,500.00	51.60	77,400.00	77,950.00
HEIFER CALVES	73.60	29,440.00	74.33	29,733.33	29,586.67
BULL CALVES	24.07	3,610.00	27.93	4,190.00	3,900.00
BULLS	.87	1,300.00	.67	1,000.00	1,150.00
** SUBTOTAL **	**392.27**	**647,266.38**	**413.67**	**683,955.17**	**665,610.78**

TOTAL DAIRY INVESTMENT	**3,041,027.96**
CAPITAL LOANS	990,567.58
OPERATOR EQUITY	2,050,460.38
INVESTMENT PER COW	15,436.69
DEBT/CAPITAL RATIO	.33
CAPITAL TURNOVER (YR)	2.08

HERD SIZE	Average	Median
NUMBER OF DAIRY COWS	197.00	127.42
NUMBER OF ANIMAL UNITS	307.36	181.42
DRY COWS (%)	22.17	
CALF CROP (%)	103.05	
PASTURE PER COW (AC.)	.17	

CATTLE SALES & PURCHASES	NUMBER SOLD	SELLING PRICE	NUMBER PURCHASED	PURCHASE PRICE
COWS	44.67	1,249.07	.00	.00
BRED HEIFERS	1.40	2,015.24	.00	.00
OPEN HEIFERS	12.73	1,346.57	.00	.00
HEIFER CALVES	3.67	96.18	.80	350.00
BULL CALVES	59.53	225.44	.00	.00
BULLS	.33	1,437.12	.27	2,625.00
TOTAL VALUE		**90,012.44**		**980.00**

Northern Alberta
2018 Dairy Cost Study - Business Analysis
15 Participants
Table 3 Labour and Management

LABOUR

	HOURS	VALUE	HOURLY RATE
OPERATOR LABOUR	2,236.77	49,208.87	22.00
HIRED LABOUR	4,315.07	99,206.01	22.99
FAMILY UNPAID LABOUR	2,550.80	55,857.27	21.90
TOTAL	**9,102.63**	**204,272.15**	**22.44**

RETURN TO FAMILY LABOUR	(6.87)
MAN EQUIVALENTS	3.64
LABOUR HOURS PER COW	46.21
YEARS FARMING	26.50

MILK PRODUCTION

	HL.	% OF TOTAL	VALUE	AVERAGE PRICE / HL
MILK SALES	16,618.52	96.85	1,323,627.29	79.65
OTHER MILK PRODUCED	539.88	3.15		
TOTAL	**17,158.40**	**100.00**		

		AVERAGE COMPONENT PRICES ($ / KG)
BUTTERFAT TEST	4.25 KG / HL	16.24
PROTEIN	3.32 KG / HL	2.41
L.O.S.	5.77 KG / HL	.68
MILK PRODUCTION PER COW	8,709.85 LITRES / YEAR	

QUOTA INFORMATION

TPQ HOLDINGS	187.71 KG / DAY
TPQ PRICE	38,682.48 $ / KG / DAY
CREDIT PRICE	8.03 $ / KG

MANAGEMENT FACTORS

COST PER HL	82.53
MILK/FEED (KG) RATIO	1.90 LITRES
MILK/LABOUR (HR) RATIO	188.50 LITRES
MILK/CAPITAL ($) RATIO	.56 LITRES

Northern Alberta
2018 Dairy Cost Study - Business Analysis
15 Participants
Table 4 Feed Report

	--- PURCHASED ---		--- HOMEGROWN---	
CONCENTRATES	**QUANTITY (TONNES)**	**PRICE**	**QUANTITY (TONNES)**	**PRICE**
OATS	.00	.00	.00	.00
BARLEY	280.50	202.50	85.16	208.42
WHEAT	.00	.00	12.67	219.86
MIXED GRAIN	.00	.00	.00	.00
BREW GRAIN (DRY EQ.)	12.20	425.01		
BEET PULP	18.25	270.93		
OTHER PURCHASED	51.31	364.73		
DAIRY RATION	259.92	606.56		
CALF FEED	13.93	589.69		
MILK REPLACER	1.27	3,388.28		
SUPPLEMENT	122.65	543.23		
MOLASSES	3.20	326.74		
SALT	1.93	822.58		
MINERALS & VITAMINS	41.15	321.69		
SUBTOTAL - - - - - - - - -	**806.31**	**338,321.36**	**97.83**	**20,535.00**
ROUGHAGE				
HAY (ALL VARIETIES)	153.12	177.55	63.61	140.61
ALFALFA PELLETS	.00	.00		
STRAW FED	20.36	61.31	30.39	63.17
GREENFEED	.92	100.00	.68	116.48
SILAGE/HAYLAGE (DRY EQ.)	349.46	154.17	767.89	130.20
SUBTOTAL - - - - - - - - -	**523.86**	**82,402.77**	**862.57**	**110,919.74**
GRINDING & PROCESSING		13,639.15		
GRAND TOTAL FEED COSTS - - - - - - - - -		**434,363.28**		**131,454.74**
BEDDING	278.19	79.29	88.23	63.20

AV. PRICE:	CONCENTRATE	396.90	$/TONNE
	ROUGHAGE	139.44	$/TONNE
FED PER COW:	CONCENTRATE	4.59	TONNES
	ROUGHAGE	7.04	TONNES
% HOME GROWN:	CONCENTRATE	10.82	%
	ROUGHAGE	62.22	%

Appendix C
2018 Dairy Cost Study
Southern Alberta Average

Southern Alberta
2018 Dairy Cost Study - Business Analysis
25 Participants
Table 1 Dairy Enterprise Costs and Returns

	TOTAL ENTERPRISE	PER COW	PER HL SOLD	PERCENT FROM INCOME
INCOME:				
MILK SALES	1,250,053.33	8,216.65	79.11	
POOL ADJUSTMENTS (+ -)	1,510.06	9.93	.10	
MISCELLANEOUS RECEIPTS	5,661.31	37.21	.36	
NET CATTLE SALES (+ -)	31,386.97	206.31	1.99	
NET INVENTORY CHANGE (+ -)	19,841.22	130.42	1.26	
GROSS INCOME - - - - - - - - - - - - - - -	**1,308,452.89**	**8,600.51**	**82.81**	**100.00**
EXPENSES:				
GRAIN	68,725.23	451.73	4.35	
COMPLETE FEED	207,550.37	1,364.24	13.14	
SUPPLEMENT	58,553.75	384.88	3.71	
MINERALS & VITAMINS	22,306.48	146.62	1.41	
ROUGHAGE	216,698.01	1,424.36	13.71	
PROCESSING COSTS	337.96	2.22	.02	
TOTAL FEED COSTS - - - - - - - - - - - -	**574,171.79**	**3,774.05**	**36.34**	**43.88**
BEDDING AND SUPPLIES	50,325.63	330.79	3.18	
BREEDING	14,431.68	94.86	.91	
VET. AND MEDICINE	26,801.70	176.17	1.70	
MILK HAULING	56,102.20	368.76	3.55	
PRODUCER'S FEES	35,635.91	234.24	2.26	
UTILITIES	24,518.94	161.16	1.55	
FUEL, OIL, LUBE	18,970.89	124.70	1.20	
BLDG. & MACH. REPAIRS	30,899.28	203.10	1.96	
MISCELLANEOUS	36,268.73	238.40	2.30	
TOTAL OTHER VARIABLE COSTS - - - -	**293,954.96**	**1,932.18**	**18.60**	**22.47**
HIRED LABOUR	31,050.30	204.09	1.97	
FAMILY LABOUR	157,793.24	1,037.18	9.99	
TOTAL LABOUR COSTS - - - - - - - - - - -	**188,843.54**	**1,241.28**	**11.95**	**14.43**
TOTAL VARIABLE COSTS	**1,056,970.29**	**6,947.51**	**66.89**	**80.78**
RENT	998.70	6.56	.06	
TAXES AND INSURANCE	20,437.60	134.34	1.29	
DEPRECIATION	137,757.02	905.48	8.72	
INTEREST (CAP.DEBT)	18,044.58	118.61	1.14	
TOTAL CAPITAL COSTS - - - - - - - - - -	**177,237.90**	**1,164.99**	**11.22**	**13.55**
TOTAL PRODUCTION COSTS	**1,234,208.19**	**8,112.50**	**78.11**	**94.33**
CONTRIBUTION MARGIN ($)	251,482.60	1,653.00	15.92	
RETURN TO EQUITY ($)	74,244.70	488.01	4.70	5.67
MILK PRICE			79.21	
INVENTORY ADJUSTMENT			3.60	
RETURN TO EQUITY (%)			3.55	
AVERAGE CAP. DEBT INTEREST RATE (%)			3.58	

Southern Alberta
2018 Dairy Cost Study - Business Analysis
25 Participants
Table 2 Statement of Investment

LAND BUILDINGS & EQUIPMENT	AGE	DEPRECIATION	DAIRY INVESTMENT
DAIRY BUILDINGS	12.54	59,542.62	**1,483,077.90**
POWER MACHINERY	8.12	29,902.10	199,991.56
DAIRY EQUIPMENT	13.68	31,127.59	110,593.90
OTHER EQUIPMENT	10.05	17,184.71	71,465.93
TOTAL EQUIPMENT	**10.30**	**78,214.40**	**382,051.39**
LAND			127,688.80
SUPPLIES			17,168.06
**** SUBTOTAL ****		**137,757.02**	**2,009,986.15**

DAIRY LIVESTOCK	--- BEGIN YEAR --- NUMBER	VALUE	--- END OF YEAR --- NUMBER	VALUE	AVERAGE VALUE
COWS	152.04	380,358.81	156.28	390,966.03	385,662.42
BRED HEIFERS	48.64	97,280.00	51.04	102,080.00	99,680.00
OPEN HEIFERS	51.28	76,920.00	53.84	80,760.00	78,840.00
HEIFER CALVES	35.24	14,096.00	36.20	14,480.00	14,288.00
BULL CALVES	4.20	630.00	4.40	660.00	645.00
BULLS	3.32	4,980.00	3.44	5,160.00	5,070.00
**** SUBTOTAL ****	**294.72**	**574,264.81**	**305.20**	**594,106.03**	**584,185.42**

TOTAL DAIRY INVESTMENT	**2,594,171.56**
CAPITAL LOANS	504,185.69
OPERATOR EQUITY	2,089,985.88
INVESTMENT PER COW	17,051.59
DEBT/CAPITAL RATIO	.19
CAPITAL TURNOVER (YR)	1.98

HERD SIZE	Average	Median
NUMBER OF DAIRY COWS	152.14	137.42
NUMBER OF ANIMAL UNITS	239.03	213.42
DRY COWS (%)	17.77	
CALF CROP (%)	103.83	
PASTURE PER COW (AC.)	.21	

CATTLE SALES & PURCHASES	NUMBER SOLD	SELLING PRICE	NUMBER PURCHASED	PURCHASE PRICE
COWS	45.96	1,036.72	6.96	2,564.57
BRED HEIFERS	1.12	1,653.02	2.96	2,072.28
OPEN HEIFERS	.60	1,280.05	.60	2,163.73
HEIFER CALVES	.84	165.26	.00	.00
BULL CALVES	47.56	191.51	.00	.00
BULLS	2.08	1,800.17	2.48	2,657.28
TOTAL VALUE		**63,258.62**		**31,871.64**

Southern Alberta
2018 Dairy Cost Study - Business Analysis
25 Participants
Table 3 Labour and Management

LABOUR

	HOURS	VALUE	HOURLY RATE
OPERATOR LABOUR	3,906.62	85,945.64	22.00
HIRED LABOUR	1,355.39	31,050.30	22.91
FAMILY UNPAID LABOUR	3,355.82	71,847.60	21.41
TOTAL	**8,617.83**	**188,843.54**	**21.91**

RETURN TO FAMILY LABOUR	.29
MAN EQUIVALENTS	3.45
LABOUR HOURS PER COW	56.65
YEARS FARMING	28.24

MILK PRODUCTION

	HL.	% OF TOTAL	VALUE	AVERAGE PRICE / HL
MILK SALES	15,801.23	97.64	1,250,053.33	79.11
OTHER MILK PRODUCED	381.70	2.36		
TOTAL	**16,182.93**	**100.00**		

		AVERAGE COMPONENT PRICES ($ / KG)
BUTTERFAT TEST	4.15 KG / HL	16.23
PROTEIN	3.28 KG / HL	2.40
L.O.S.	5.76 KG / HL	.68
MILK PRODUCTION PER COW	10,637.10 LITRES / YEAR	

QUOTA INFORMATION

TPQ HOLDINGS	171.59 KG / DAY
TPQ PRICE	39,210.26 $ / KG / DAY
CREDIT PRICE	9.52 $ / KG

MANAGEMENT FACTORS

COST PER HL	78.11
MILK/FEED (KG) RATIO	2.31 LITRES
MILK/LABOUR (HR) RATIO	187.78 LITRES
MILK/CAPITAL ($) RATIO	.62 LITRES

Southern Alberta
2018 Dairy Cost Study - Business Analysis
25 Participants
Table 4 Feed Report

	--- PURCHASED ---		--- HOMEGROWN---	
CONCENTRATES	**QUANTITY (TONNES)**	**PRICE**	**QUANTITY (TONNES)**	**PRICE**
OATS	2.61	160.75	.00	.00
BARLEY	19.38	222.29	120.25	229.81
WHEAT	.14	233.41	.25	226.05
MIXED GRAIN	.00	.00	.00	.00
BREW GRAIN (DRY EQ.)	7.56	176.23		
BEET PULP	.00	.00		
OTHER PURCHASED	88.90	393.05		
DAIRY RATION	324.15	561.79		
CALF FEED	25.81	592.49		
MILK REPLACER	3.02	3,365.37		
SUPPLEMENT	78.85	697.97		
MOLASSES	11.10	317.31		
SALT	1.13	465.70		
MINERALS & VITAMINS	17.22	1,265.17		
SUBTOTAL - - - - - - - - -	**579.85**	**329,443.63**	**120.51**	**27,692.20**
ROUGHAGE				
HAY (ALL VARIETIES)	229.48	183.20	138.74	214.06
ALFALFA PELLETS	.00	.00		
STRAW FED	13.94	54.70	33.20	84.49
GREENFEED	.00	.00	3.75	168.31
SILAGE/HAYLAGE (DRY EQ.)	91.90	141.56	660.84	193.31
SUBTOTAL - - - - - - - - -	**335.33**	**55,814.56**	**836.53**	**160,883.45**
GRINDING & PROCESSING		337.96		
GRAND TOTAL FEED COSTS - - - - - - - - -		**385,596.14**		**188,575.65**
BEDDING	242.12	76.30	5.52	85.14

AV. PRICE:	CONCENTRATE	509.93	$/TONNE
	ROUGHAGE	184.92	$/TONNE
FED PER COW:	CONCENTRATE	4.60	TONNES
	ROUGHAGE	7.70	TONNES
% HOME GROWN:	CONCENTRATE	17.21	%
	ROUGHAGE	71.38	%

Appendix D
Dairy Cost Study
Alberta 5 Year Average
(2014 – 2018)

Alberta Dairy Cost Study
Business Analysis (2014 - 2018)
Average 44 Participants
Table 1 Dairy Enterprise Costs and Returns

	TOTAL ENTERPRISE	PER COW	PER HL SOLD	PERCENT FROM INCOME
INCOME:				
MILK SALES	1,151,796.92	7,398.50	80.08	
POOL ADJUSTMENTS (+ -)	1,382.93	9.11	.10	
MISCELLANEOUS RECEIPTS	6,071.83	39.05	.42	
NET CATTLE SALES (+ -)	68,855.26	446.01	4.84	
NET INVENTORY CHANGE (+ -)	20,777.79	131.64	1.42	
GROSS INCOME - - - - - - - - - - - - - - -	**1,248,884.72**	**8,024.31**	**86.86**	**100.00**
EXPENSES:				
GRAIN	66,115.89	421.97	4.56	
COMPLETE FEED	161,065.47	1,031.35	11.15	
SUPPLEMENT	58,628.89	378.62	4.10	
MINERALS & VITAMINS	13,418.81	85.18	.92	
ROUGHAGE	177,608.06	1,140.75	12.33	
PROCESSING COSTS	3,848.61	24.38	.26	
TOTAL FEED COSTS - - - - - - - - - - - -	**480,685.73**	**3,082.25**	**33.33**	**38.40**
BEDDING AND SUPPLIES	43,090.85	275.71	2.98	
BREEDING	14,951.62	95.73	1.04	
VET. AND MEDICINE	27,767.29	177.78	1.92	
MILK HAULING	48,748.22	311.88	3.37	
PRODUCER'S FEES	31,210.75	200.14	2.17	
UTILITIES	24,010.62	154.45	1.67	
FUEL, OIL, LUBE	17,943.26	116.44	1.26	
BLDG. & MACH. REPAIRS	35,113.49	225.30	2.44	
MISCELLANEOUS	46,637.36	299.66	3.24	
TOTAL OTHER VARIABLE COSTS - - - -	**289,473.45**	**1,857.09**	**20.09**	**23.15**
HIRED LABOUR	50,101.71	321.13	3.48	
FAMILY LABOUR	123,821.56	796.95	8.63	
TOTAL LABOUR COSTS - - - - - - - - - - -	**173,923.27**	**1,118.08**	**12.10**	**13.94**
TOTAL VARIABLE COSTS	**944,082.45**	**6,057.42**	**65.53**	**75.48**
RENT	3,509.72	22.59	.24	
TAXES AND INSURANCE	23,038.69	147.89	1.60	
DEPRECIATION	130,611.48	837.11	9.06	
INTEREST (CAP.DEBT)	22,482.63	144.62	1.57	
TOTAL CAPITAL COSTS - - - - - - - - - -	**179,642.52**	**1,152.20**	**12.47**	**14.36**
TOTAL PRODUCTION COSTS	**1,123,724.97**	**7,209.62**	**78.00**	**89.84**
CONTRIBUTION MARGIN ($)	304,802.27	1,966.89	21.33	
RETURN TO EQUITY ($)	125,159.75	814.69	8.86	10.16
MILK PRICE			80.18	
INVENTORY ADJUSTMENT			6.68	
RETURN TO EQUITY (%)			6.94	
AVERAGE CAP. DEBT INTEREST RATE (%)			3.54	

Alberta Dairy Cost Study
Business Analysis (2014 - 2018)
Average 44 Participants
Table 2 Statement of Investment

LAND BUILDINGS & EQUIPMENT	AGE	DEPRECIATION	DAIRY INVESTMENT
DAIRY BUILDINGS	12.36	58,412.34	**1,452,019.96**
POWER MACHINERY	8.28	25,503.75	170,135.63
DAIRY EQUIPMENT	12.14	30,274.60	115,279.68
OTHER EQUIPMENT	9.39	16,420.81	70,154.98
TOTAL EQUIPMENT	**9.76**	**72,199.15**	**355,570.28**
LAND			128,255.24
SUPPLIES			16,516.47
** SUBTOTAL **		**130,611.48**	**1,952,361.96**

DAIRY LIVESTOCK	--- BEGIN YEAR --- NUMBER	VALUE	--- END OF YEAR --- NUMBER	VALUE	AVERAGE VALUE
COWS	153.75	342,845.97	159.64	356,062.44	349,454.21
BRED HEIFERS	45.66	89,669.05	49.47	97,249.75	93,459.40
OPEN HEIFERS	55.97	74,959.02	55.55	74,396.39	74,677.71
HEIFER CALVES	43.91	13,846.96	44.47	14,081.60	13,964.28
BULL CALVES	8.65	1,391.69	10.04	1,654.83	1,523.26
BULLS	2.04	3,056.01	2.07	3,101.49	3,078.75
** SUBTOTAL **	**309.97**	**525,768.71**	**321.25**	**546,546.50**	**536,157.61**

TOTAL DAIRY INVESTMENT	**2,488,519.56**
CAPITAL LOANS	643,783.35
OPERATOR EQUITY	1,844,736.21
INVESTMENT PER COW	15,941.90
DEBT/CAPITAL RATIO	.26
CAPITAL TURNOVER (YR)	1.99

HERD SIZE	Average	Median
NUMBER OF DAIRY COWS	155.61	127.78
NUMBER OF ANIMAL UNITS	245.87	197.87
DRY COWS (%)	19.45	
CALF CROP (%)	103.23	
PASTURE PER COW (AC.)	.25	

CATTLE SALES & PURCHASES	NUMBER SOLD	SELLING PRICE	NUMBER PURCHASED	PURCHASE PRICE
COWS	42.38	1,415.02	2.52	2,658.91
BRED HEIFERS	2.63	2,077.08	1.43	2,380.99
OPEN HEIFERS	2.92	1,756.86	.61	1,619.14
HEIFER CALVES	1.34	411.84	.28	314.71
BULL CALVES	45.26	222.22	.00	.00
BULLS	1.18	1,952.02	1.19	2,880.27
TOTAL VALUE		**83,238.44**		**14,383.18**

Alberta Dairy Cost Study
Business Analysis (2014 - 2018)
Average 44 Participants
Table 3 Labour and Management

LABOUR

	HOURS	VALUE	HOURLY RATE
OPERATOR LABOUR	3,141.04	68,418.69	21.80
HIRED LABOUR	2,290.99	50,101.71	21.86
FAMILY UNPAID LABOUR	2,649.61	55,402.87	20.89
TOTAL	**8,081.64**	**173,923.27**	**21.52**
RETURN TO FAMILY LABOUR	8.30		
MAN EQUIVALENTS	3.23		
LABOUR HOURS PER COW	51.94		
YEARS FARMING	25.76		

MILK PRODUCTION

	HL.	% OF TOTAL	VALUE	AVERAGE PRICE / HL
MILK SALES	14,400.46	97.27	1,151,796.92	80.08
OTHER MILK PRODUCED	402.26	2.73		
TOTAL	**14,802.72**	**100.00**		

		AVERAGE COMPONENT PRICES ($ / KG)
BUTTERFAT TEST	4.08 KG / HL	12.78
PROTEIN	3.32 KG / HL	3.64
L.O.S.	5.73 KG / HL	2.81
MILK PRODUCTION PER COW	9,500.07 LITRES / YEAR	

QUOTA INFORMATION

TPQ HOLDINGS	152.05 KG / DAY
TPQ PRICE	37,919.81 $ / KG / DAY
CREDIT PRICE	7.74 $ / KG

MANAGEMENT FACTORS

COST PER HL	78.00
MILK/FEED (KG) RATIO	2.12 LITRES
MILK/LABOUR (HR) RATIO	182.94 LITRES
MILK/CAPITAL ($) RATIO	.60 LITRES

Alberta Dairy Cost Study
Business Analysis (2014 - 2018)
Average 44 Participants
Table 4 Feed Report

	--- PURCHASED ---		--- HOMEGROWN---	
CONCENTRATES	**QUANTITY (TONNES)**	**PRICE**	**QUANTITY (TONNES)**	**PRICE**
OATS	2.89	135.93	1.44	141.51
BARLEY	94.14	180.49	110.40	186.65
WHEAT	.06	88.88	1.16	192.43
MIXED GRAIN	6.95	92.82	.00	.00
BREW GRAIN (DRY EQ.)	12.84	228.04		
BEET PULP	6.07	237.14		
OTHER PURCHASED	54.54	371.28		
DAIRY RATION	270.18	534.08		
CALF FEED	19.92	535.57		
MILK REPLACER	1.74	3,489.49		
SUPPLEMENT	96.03	590.44		
MOLASSES	6.23	319.02		
SALT	1.65	525.35		
MINERALS & VITAMINS	12.64	1,088.17		
SUBTOTAL - - - - - - - - -	**585.89**	**278,091.05**	**113.00**	**21,138.02**
ROUGHAGE				
HAY (ALL VARIETIES)	159.31	172.64	144.75	178.25
ALFALFA PELLETS	.00	.00		
STRAW FED	7.86	61.22	19.46	64.50
GREENFEED	1.87	96.08	2.21	134.38
SILAGE/HAYLAGE (DRY EQ.)	217.32	133.03	606.88	155.05
SUBTOTAL - - - - - - - - -	**386.36**	**57,270.41**	**773.29**	**120,337.65**
GRINDING & PROCESSING		3,848.61		
GRAND TOTAL FEED COSTS - - - - - - - - -		**339,210.06**		**141,475.67**
BEDDING	193.79	66.29	64.48	60.40

AV. PRICE:	CONCENTRATE	426.83	$/TONNE
	ROUGHAGE	153.29	$/TONNE
FED PER COW:	CONCENTRATE	4.49	TONNES
	ROUGHAGE	7.46	TONNES
% HOME GROWN:	CONCENTRATE	16.35	%
	ROUGHAGE	66.66	%

Appendix E
2018 Dairy Cost Study
Individual Participant Results
(40 Participants)

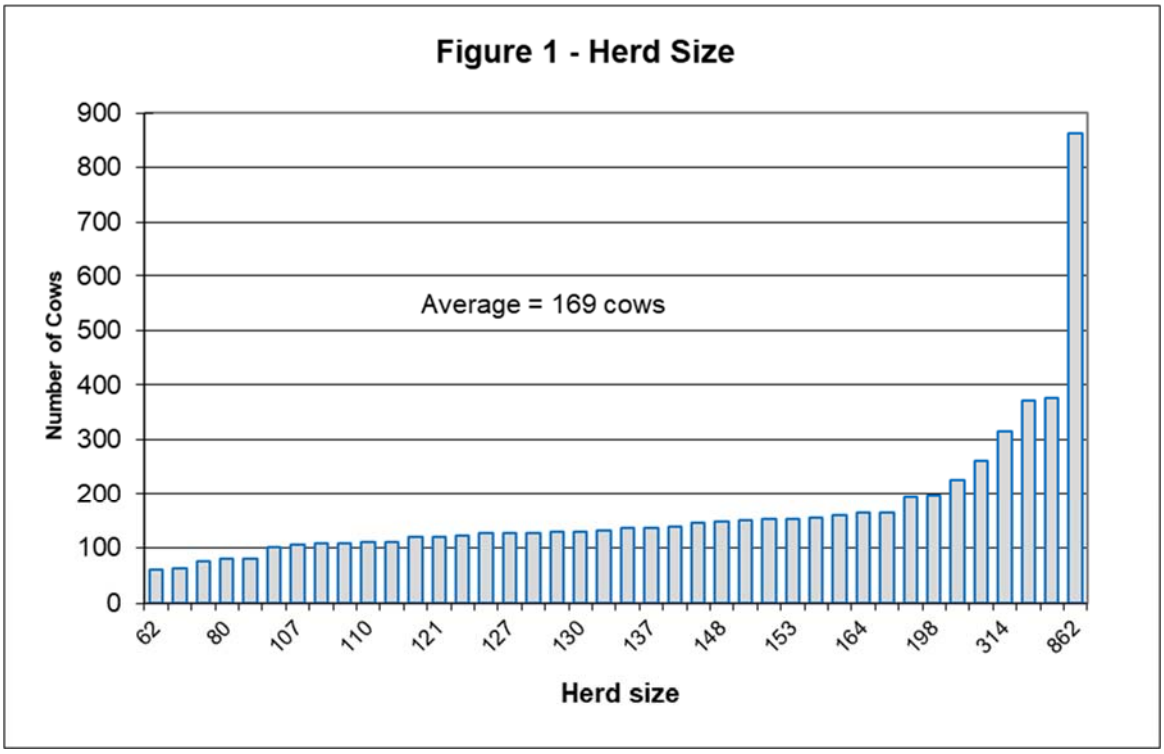


Figure 1 - Herd Size
900
800
700
600
500
400
300
200
100
0
Number of Cows
Average = 169 cows
62
80
107
110
121
127
130
137
148
153
164
198
314
862
Herd size

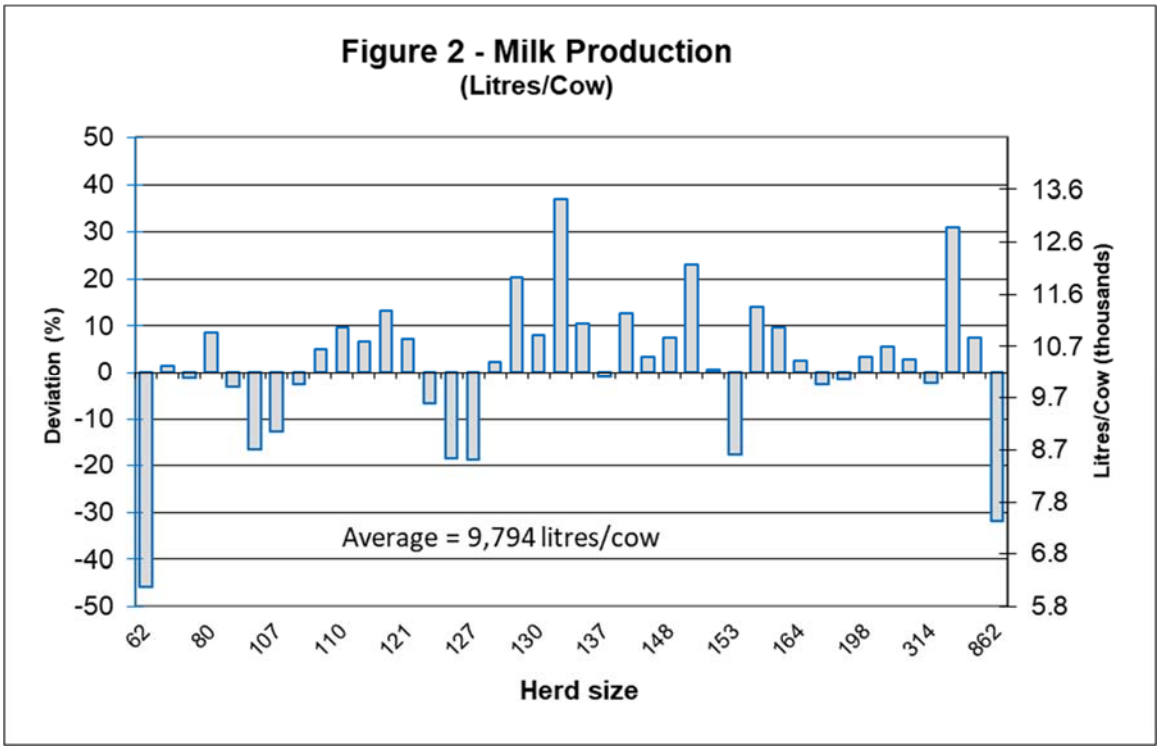


Figure 2 - Milk Production
(Litres/Cow)
50
40
30
20
10
0
-10
-20
-30
-40
-50
Deviation (%)
13.6
12.6
11.6
10.7
9.7
8.7
7.8
6.8
5.8
Litres/Cow (thousands)
Average = 9,794 litres/cow
62
80
107
110
121
127
130
137
148
153
164
198
314
862
Herd size

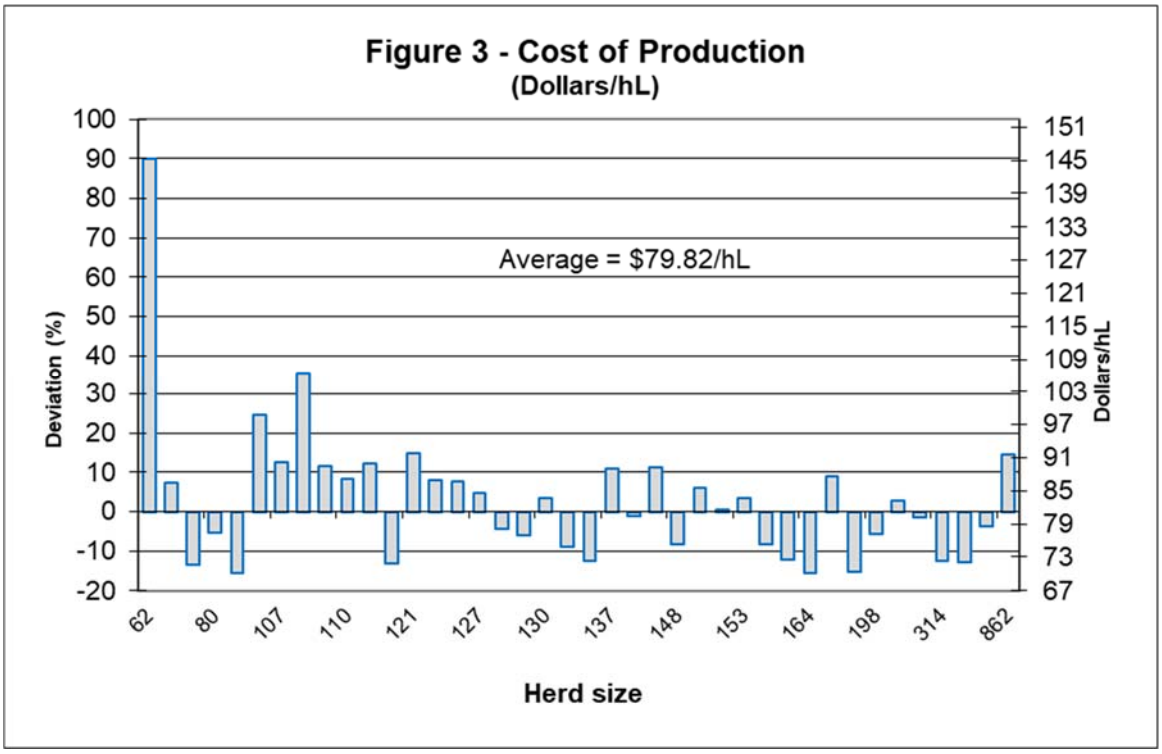


Figure 3 - Cost of Production
(Dollars/hL)
Average = $79.82/hL
Deviation (%)
Dollars/hL
Herd size
100
90
80
70
60
50
40
30
20
10
0
-10
-20
151
145
139
133
127
121
115
109
103
97
91
85
79
73
67
62
80
107
110
121
127
130
137
148
153
164
198
314
862

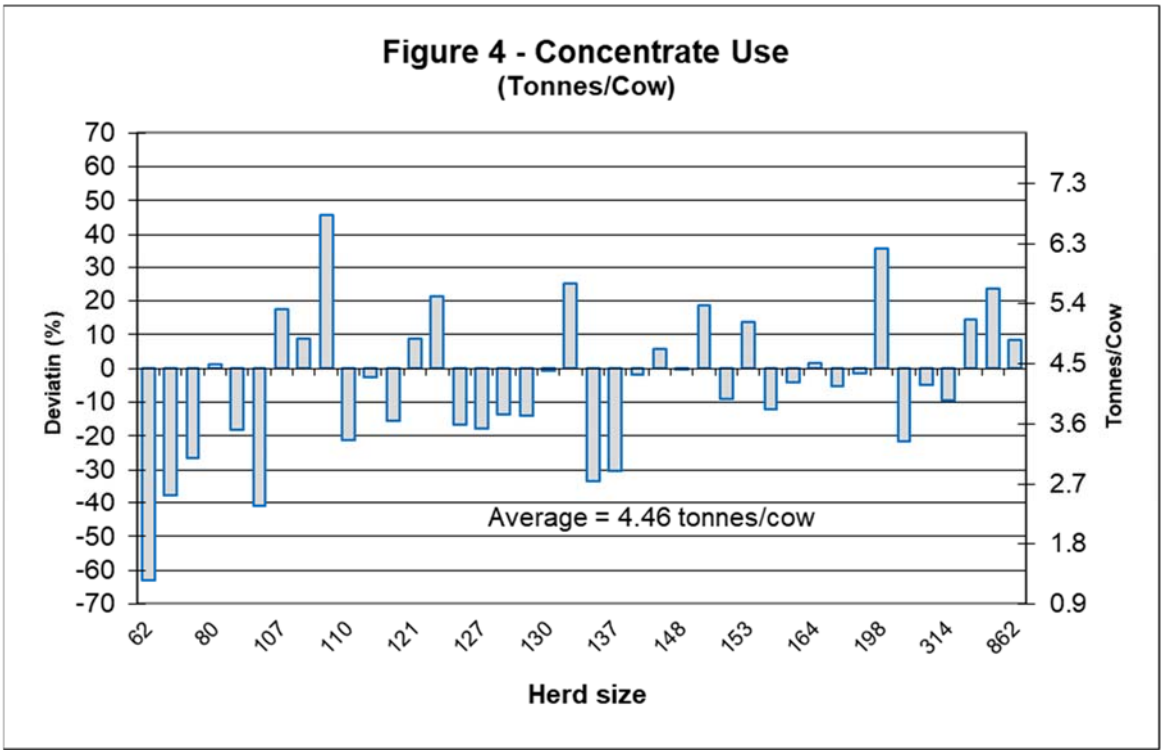


Figure 4 - Concentrate Use
(Tonnes/Cow)
Average = 4.46 tonnes/cow
Deviatin (%)
Tonnes/Cow
Herd size
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
7.3
6.3
5.4
4.5
3.6
2.7
1.8
0.9
62
80
107
110
121
127
130
137
148
153
164
198
314
862

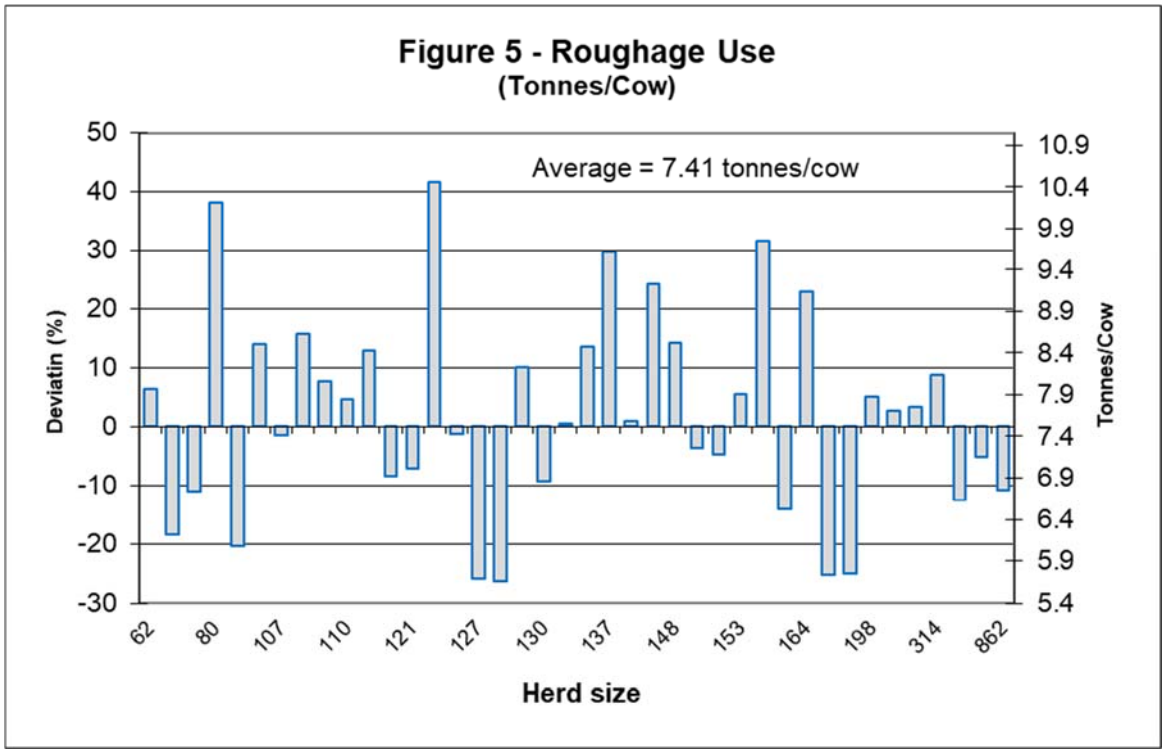


Figure 5 - Roughage Use
(Tonnes/Cow)
Average = 7.41 tonnes/cow
Deviatin (%)
Tonnes/Cow
50
40
30
20
10
0
-10
-20
-30
10.9
10.4
9.9
9.4
8.9
8.4
7.9
7.4
6.9
6.4
5.9
5.4
62
80
107
110
121
127
130
137
148
153
164
198
314
862
Herd size

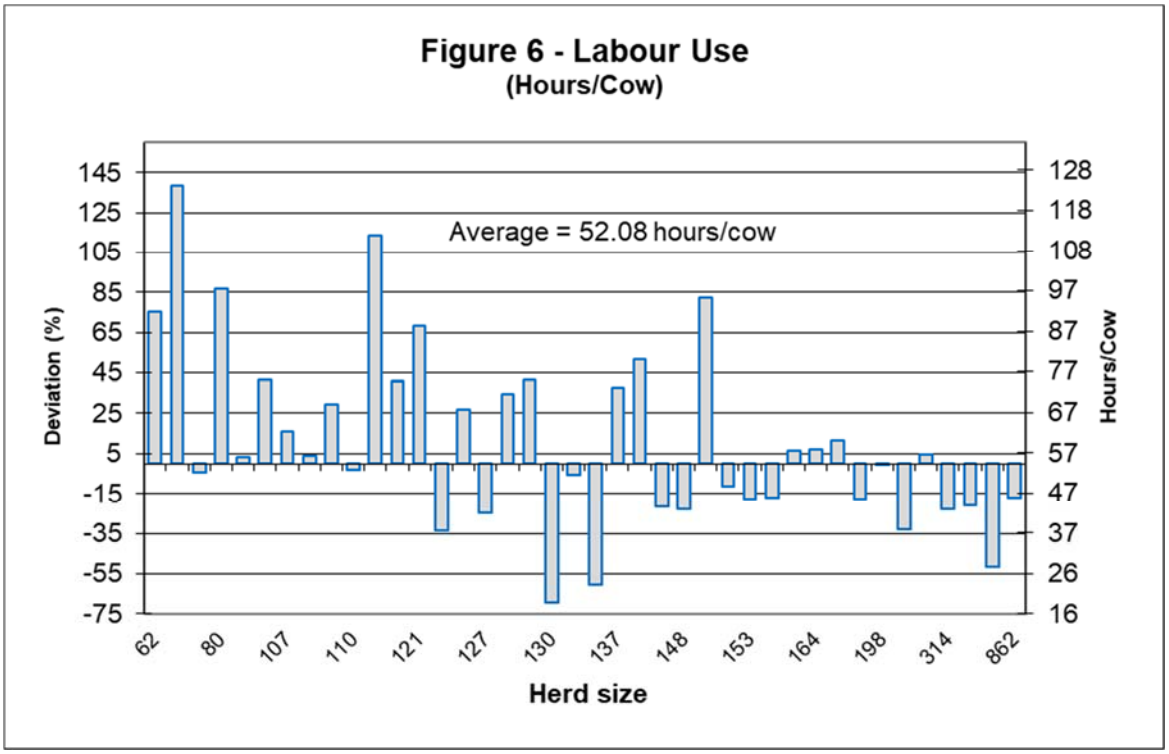


Figure 6 - Labour Use
(Hours/Cow)
Average = 52.08 hours/cow
Deviation (%)
Hours/Cow
145
125
105
85
65
45
25
5
-15
-35
-55
-75
128
118
108
97
87
77
67
57
47
37
26
16
62
80
107
110
121
127
130
137
148
153
164
198
314
862
Herd size

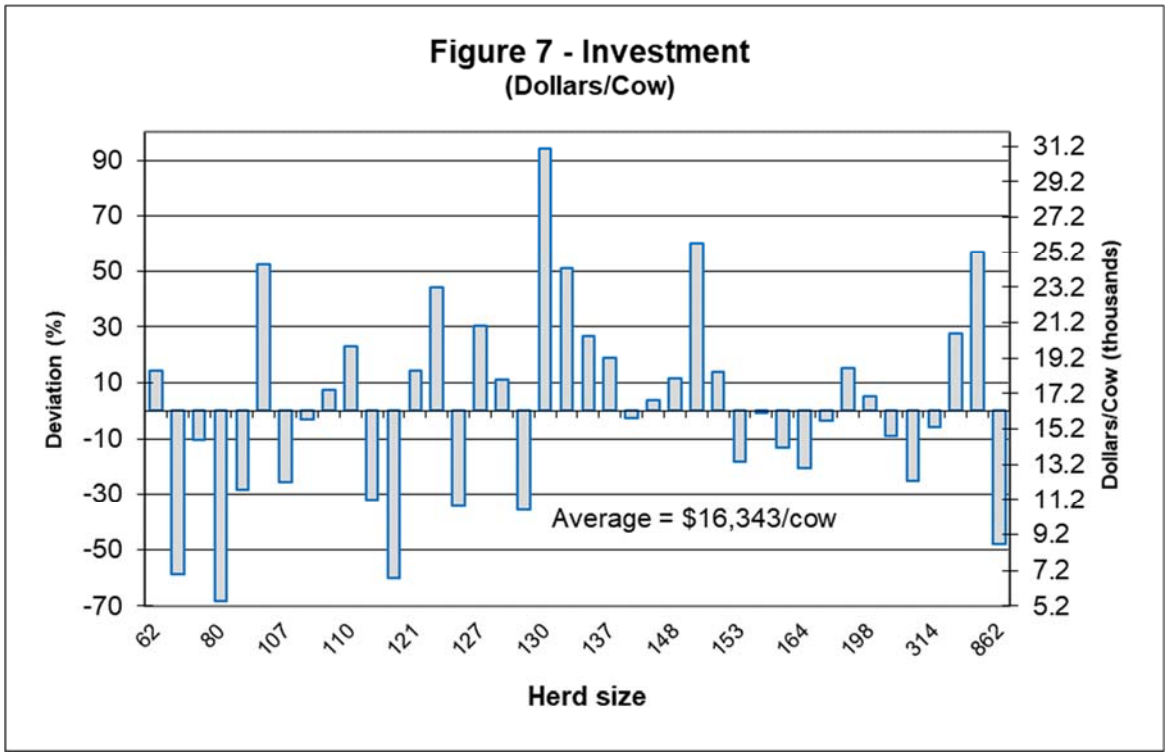


Figure 7 - Investment
(Dollars/Cow)
Deviation (%)
90
70
50
30
10
-10
-30
-50
-70
31.2
29.2
27.2
25.2
23.2
21.2
19.2
17.2
15.2
13.2
11.2
9.2
7.2
5.2
Dollars/Cow (thousands)
Average = $16,343/cow
62
80
107
110
121
127
130
137
148
153
164
198
314
862
Herd size

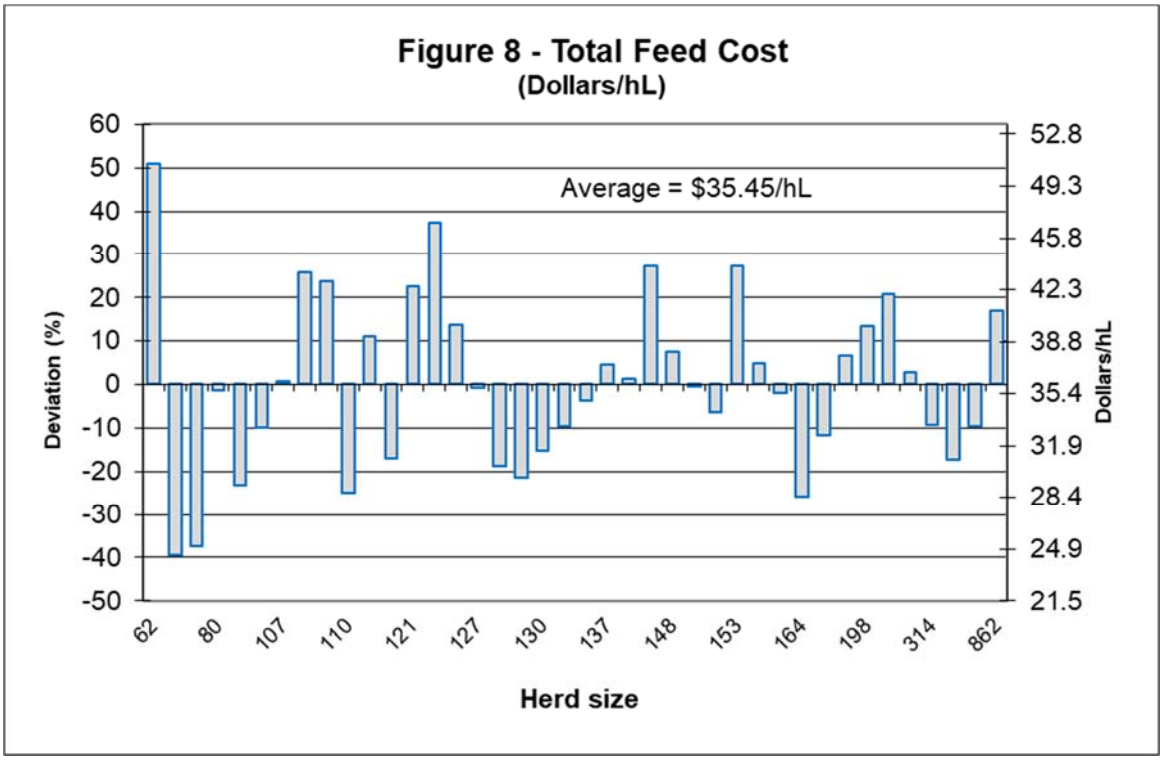


Figure 8 - Total Feed Cost
(Dollars/hL)
Deviation (%)
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
52.8
49.3
45.8
42.3
38.8
35.4
31.9
28.4
24.9
21.5
Dollars/hL
Average = $35.45/hL
62
80
107
110
121
127
130
137
148
153
164
198
314
862
Herd size

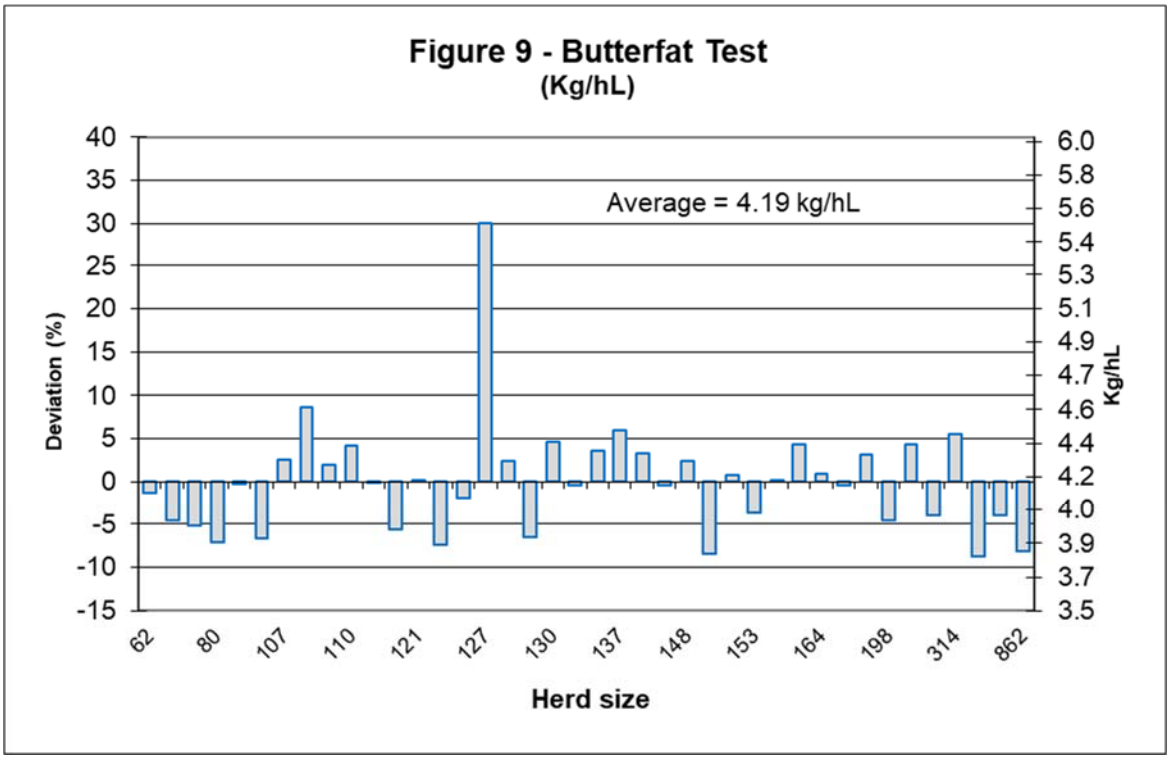


Figure 9 - Butterfat Test
(Kg/hL)
Average = 4.19 kg/hL
Deviation (%)
Kg/hL
40
35
30
25
20
15
10
5
0
-5
-10
-15
6.0
5.8
5.6
5.4
5.3
5.1
4.9
4.7
4.6
4.4
4.2
4.0
3.9
3.7
3.5
62
80
107
110
121
127
130
137
148
153
164
198
314
862
Herd size

Appendix F
2018 Dairy Cost Study
Data Collection Forms

DAIRY COST STUDY, 2018

Confidential

Investments and Liabilities

General Information

Contact Name:	TPQ Holdings kg/day: (January 2018)
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, 2018	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 Section, Alberta Agriculture and Forestry, #303, 7000 - 113 Street, Edmonton, Alberta, T6H 5T6 or phone: 780-422-3771

DAIRY COST STUDY, 2018

Name: _____

Supplies Inventory, Machinery and Buildings, January 1, 2018

	Supplies Inventory	Value: Jan. 1, 2018	% 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					

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

Dairy Equipment:					
3					
3					
3					
3					
3					
3					
3					
3					
3					
3					
	Examples: bulk tank, pipeline, milk meters, washer, vacuum pump, generator, buckets				

		Purchased	Year	% to Dairy	% to Other
Other Equipment Used for Dairy:		Price	Purchased		Farm
4					
4					
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, 2018

Confidential

Monthly Reporting Sheet

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		Specify	Total Value ($)	% to Dairy	% to Other Farm
1	Equipment	*Purchases:*				
2		*Sales:*				
3	Tractor/Truck	*Purchases:*				
4		*Sales:*				
5	Buildings	*Purchases/Const:*				
6		*Sales:*				
13	TPQ	*Purchased:*	(kgs/day)			
14		*Sold:*	(kgs/day)			
16	Credit Transfers		($/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)			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)						26	Calf Feed				
7	Silage						27	Milk Replacer				
8	Haylage						28	Salt				
9	Greenfeed						29	Min. & Vit.				
10	Straw - Fed											
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	Wages & Board
1	Operator			
2	Wife, Partner, 2nd Operator			
3	Family Labour	*16 yrs and Over*		
4		*Under 16*		
5	Hired Labour	*1*		
5		*2*		

* 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