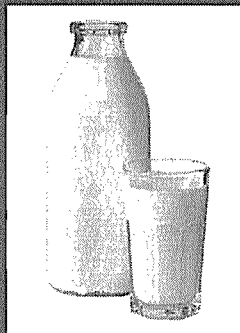


# Dairy Cost Study

The Economics of  
Milk Production  
in Alberta  
2009



Government  
of Alberta

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**THE DAIRY COST STUDY:  
ECONOMICS OF MILK PRODUCTION  
IN ALBERTA  
2009**

**Volume 69**

by

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## Introduction

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

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

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

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

As the analysis is based on monthly survey data collected from milk producers, the results indicate the cost of producing both fluid and industrial milk. However, the cost of producing only industrial milk should not be significantly different. In 2009, approximately 52 percent of Alberta's total milk production went into fluid milk, with the remainder going to industrial uses. Moreover, since 1988 the quality of fluid and industrial milk in Alberta has become indistinguishable. Effective August, 2008, Alberta moved to a total production quota system (TPQ) and no distinction is made between milk produced for fluid or industrial purposes at the farm level.

## The Survey Group

Fifty-one dairy producers across the province submitted monthly business information for the 2009 calendar year. Two regional sub-groups were also identified for Northern Alberta (north of Ponoka) and Southern Alberta. Northern Alberta was represented by 21 producers while Southern Alberta had 30 participants complete the study.

The study was designed to represent a cross section of dairy farms by the size of their milk quota. Efforts were made to select study participants by systematic random sampling to provide better representation of the total population. Some characteristics of the sample are shown in Table 1. Appendix D presents charts showing individual results for the 51 dairy cost study participants.

**Table 1**  
**2009 Sample Characteristics**

Years in Dairy	Total Sample %	<u>Indebtedness</u>		<u>Herd Size (# of cows)</u>	
		<30%	≥30%	<75	≥75
<10	22	2	9	3	8
≥10	78	21	19	8	32
<b>Total (%)</b>	<b>100</b>	<b>45</b>	<b>55</b>	<b>22</b>	<b>78</b>

## Study Methodology

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

dairy enterprise is charged the current market value for these home-grown inputs, just as if they were purchased from the cropping enterprise. The total value of home-grown feed is determined by multiplying the regional value or price by the actual quantity fed. This procedure adequately compensates for the production cost of home-grown feed. Alternatively, where feed is purchased, the actual purchase cost is used in the analysis.

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



for the dairy enterprise are subtracted from gross income, the bottom line residual is the return to equity and management. When this residual is expressed as a percentage of the equity capital, then the percent return to equity can be compared with the returns from alternative investment opportunities such as Canada Savings Bonds or term deposits.

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

## Dairy Enterprise Economic Overview

Tables 2 through 4 provide a summary of the costs and returns for dairy producers in Alberta. (Definitions of terms listed in the tables are provided on page nine. 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. As well, costs and returns are provided for two sub-groups of dairy producers based on their total production costs, namely the bottom 1/3 and the top 1/3. The bottom 1/3 are the highest cost producers and the top 1/3 the lowest cost producers. The top 1/3 group's total costs were 28% or \$22.19/hL lower than the bottom 1/3. Gross income was very close to being equal with only a difference of 1% or \$0.93/hL. This is a change from previous years as from 2006-2008 the difference was closer to 4%.

Table 3 compares the average costs and returns for 2008 and 2009. In 2009, total costs increased by \$3.54/hL or 5.3% compared to 2008. This increase is mainly due to the higher forage prices. This is the reverse of 2008 when the grains were higher priced and the forages were lower. In 2009 there was also activity in investments in buildings and equipment which brought an increase to capital costs, including depreciation.

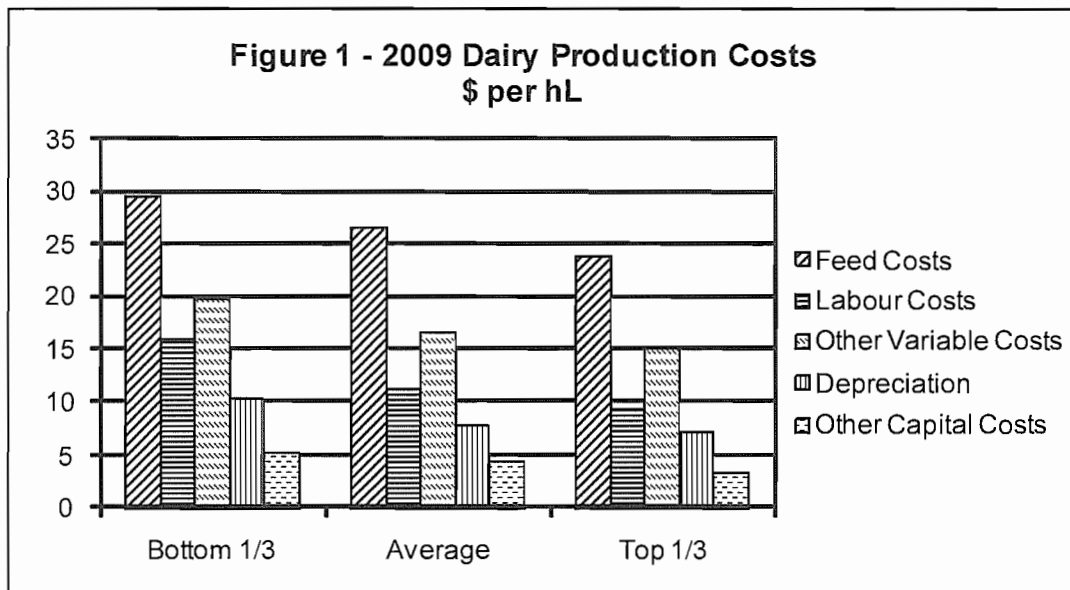
Finally, Table 4 compares average costs and returns for Northern and Southern Alberta.

**Table 2**

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

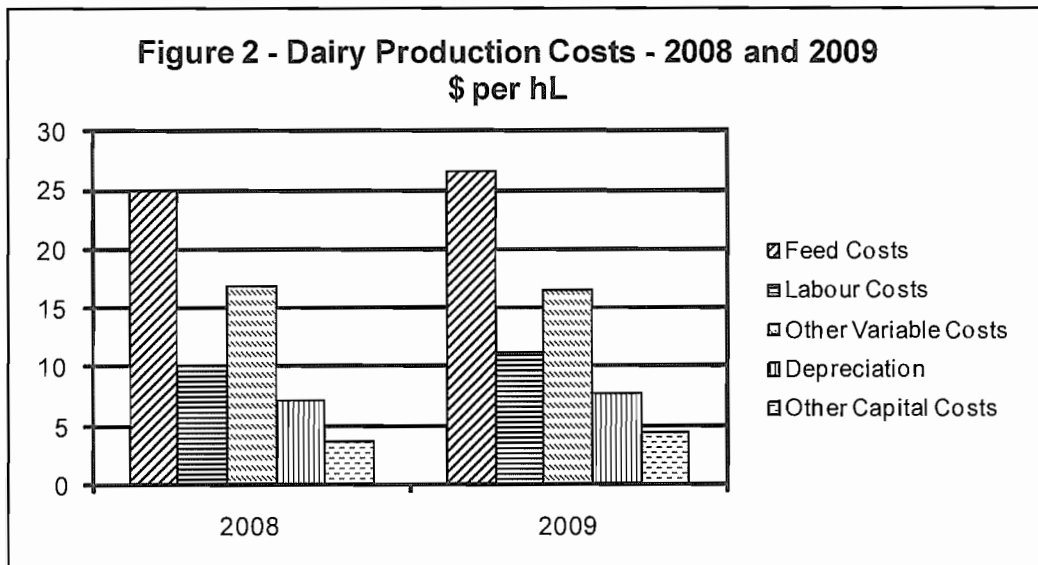
**Bottom 1/3 (Highest Cost Producers), Average Cost, Top 1/3 (Lowest Cost Producers)**

	Bottom 1/3	Average	Top 1/3
Milk Sales	76.94	75.49	75.35
<b>Gross Income</b>	<b>79.02</b>	<b>77.54</b>	<b>78.09</b>
Feed Cost	29.55	26.54	23.70
Main Feed Components:			
Grain	2.00	3.32	2.37
Complete Feed	11.07	8.45	6.87
Roughage	12.57	10.42	9.80
Labour Costs	15.79	11.17	9.31
Other Variable Costs	19.65	16.60	15.02
Depreciation	10.36	7.72	7.03
Other Capital Costs	5.30	4.39	3.39
<b>Total Production Costs</b>	<b>80.64</b>	<b>66.43</b>	<b>58.45</b>
<hr/>			
Total Cash Costs	55.47	51.02	45.27
<hr/>			
<b>Gross Margin</b>	<b>23.55</b>	<b>26.51</b>	<b>32.81</b>
<b>Contribution Margin</b>	<b>14.04</b>	<b>23.22</b>	<b>30.05</b>
<b>Return to Investment</b>	<b>1.95</b>	<b>13.91</b>	<b>21.63</b>
<b>Return to Equity &amp; Management</b>	<b>-1.63</b>	<b>11.11</b>	<b>19.63</b>
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Return to Investment (%)	1.3	10.3	17.9
Return to Equity & Management (%)	-2.7	13.4	25.0



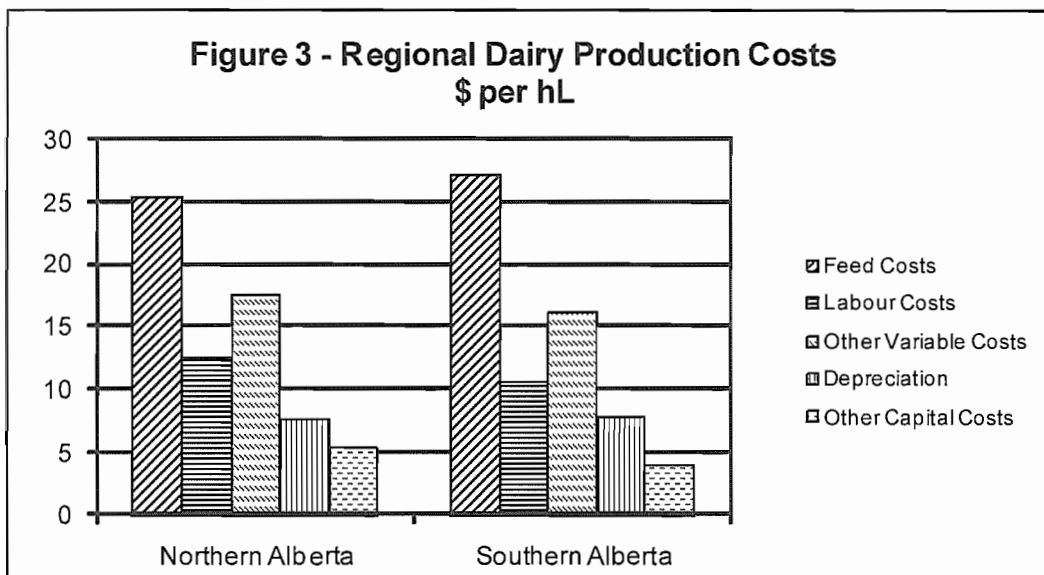
**Table 3**  
**Dairy Enterprise Costs and Returns - \$ Per hL Sold**  
**2008 and 2009**

	2008 (58 producers)	2009 (51 producers)
Milk Sales	72.60	75.49
<b>Gross Income</b>	<b>76.13</b>	<b>77.54</b>
Feed Costs	24.89	26.54
Main Feed Components:		
Grain	3.77	3.32
Complete Feed	8.79	8.45
Roughage	8.00	10.42
Labour Costs	10.14	11.17
Other Variable Costs	16.91	16.60
Depreciation	7.19	7.72
Other Capital Costs	3.75	4.39
<b>Total Production Costs</b>	<b>62.89</b>	<b>66.43</b>
<b>Total Cash Costs</b>	<b>48.64</b>	<b>51.02</b>
<b>Gross Margin</b>	<b>27.49</b>	<b>26.51</b>
<b>Contribution Margin</b>	<b>24.18</b>	<b>23.22</b>
<b>Return to Investment</b>	<b>15.64</b>	<b>13.91</b>
<b>Return to Equity &amp; Management</b>	<b>13.24</b>	<b>11.11</b>
<b>Return to Investment (%)</b>	<b>12.1</b>	<b>10.3</b>
<b>Return to Equity &amp; Management (%)</b>	<b>15.3</b>	<b>13.4</b>



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

	Northern Alberta (21 Producers)	Southern Alberta (30 Producers)
Milk Sales	74.32	76.09
<b>Gross Income</b>	<b>77.50</b>	<b>77.56</b>
Feed Costs	25.37	27.15
Main Feed Components:		
Grain	3.54	3.21
Complete Feed	9.35	7.98
Roughage	9.68	10.80
Labour Cost	12.40	10.52
Other Variable Costs	17.53	16.12
Depreciation	7.58	7.80
Other Capital Costs	5.36	3.89
<b>Total Production Costs</b>	<b>68.25</b>	<b>65.48</b>
Total Cash Costs	51.89	50.47
<b>Gross Margin</b>	<b>25.61</b>	<b>26.99</b>
<b>Contribution Margin</b>	<b>22.20</b>	<b>23.76</b>
<b>Return to Investment</b>	<b>12.34</b>	<b>14.73</b>
<b>Return to Equity &amp; Management</b>	<b>9.25</b>	<b>12.08</b>
<b>Return to Investment (%)</b>	<b>9.1</b>	<b>11.0</b>
<b>Return to Equity &amp; Management (%)</b>	<b>11.6</b>	<b>14.3</b>



## Definitions for the Dairy Cost Study

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

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

- ◆ milk sales,
- ◆ revenues from miscellaneous sources (eg. colostrum sales, BSE test cow payments) Effective 2008, this now includes income for environmental compliance and a milk quality bonus (if applicable),
- ◆ inventory adjustments relating 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 - a 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.

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

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

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

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

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

Contribution Margin - gross income less variable costs.

Gross Margin - gross income less total cash costs.

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

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

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)

## 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 is 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 has been divided into three sub-groups based on herd size. The bottom 1/3 group consists of the smallest dairy enterprises while the top 1/3 group consists of the largest producers. Production and management results are shown for each sub-group in the accompanying table and figures.

# Dairy Characteristics by Herd Size Class

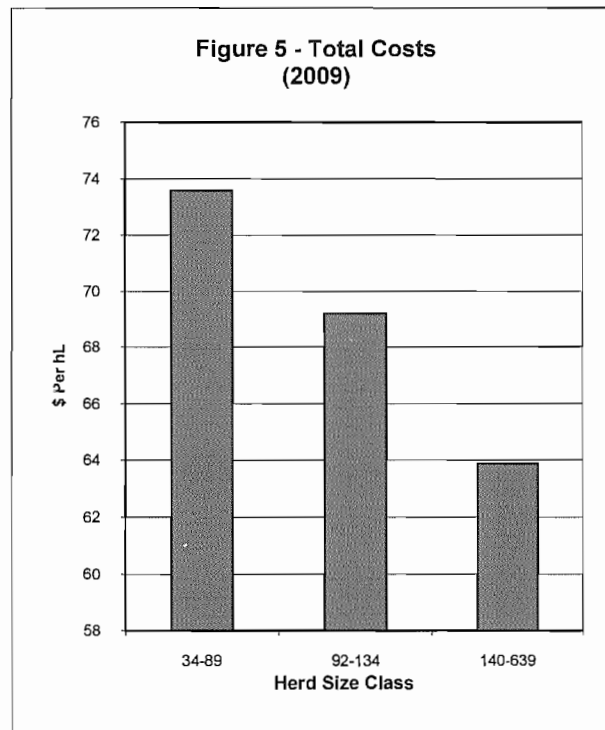
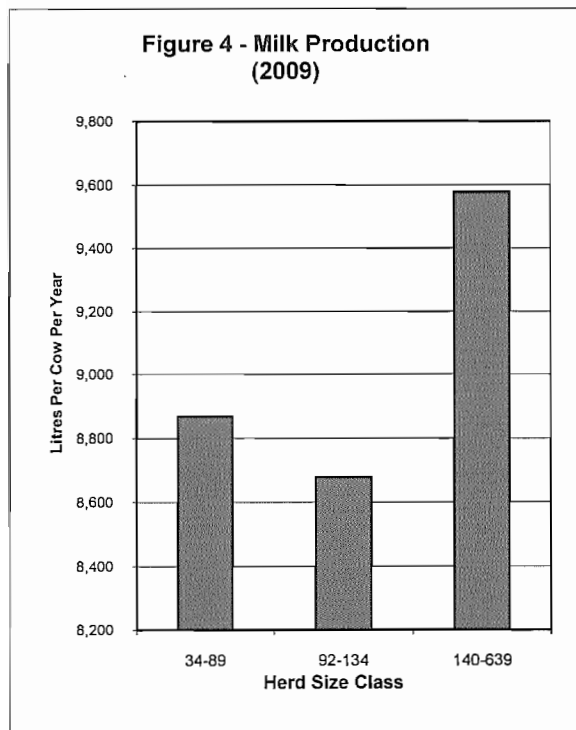
**Table 5 - Dairy Enterprise Characteristics by Herd Size Class**

Herd Sizes ranged from 34 to 639 milking cows. For this analysis, the sample group was split into the following three size classes:

- Bottom 1/3      34 - 89
- Middle 1/3    92 - 134
- Top 1/3        140 - 639

	Bottom 1/3 34-89	Middle 1/3 92-134	Top 1/3 140-639
Years in Dairy	16.32	21.26	19.88
<b>Milk Production (litres/yr)</b>	<b>8,867.80</b>	<b>8,678.15</b>	<b>9,576.60</b>
Home Grown Feed (%)	78.3	73.1	65.8
Butterfat Test (kg/hL)	3.87	3.80	3.76
Gross Income (\$/hL)	78.71	77.96	77.40
<b>Total Costs (\$/hL)</b>	<b>73.57</b>	<b>69.20</b>	<b>63.88</b>
Feed Costs (\$/hL)	26.09	27.24	26.76
Labour (hrs/cow)	68.06	53.01	44.82
Investment (\$/cow)	12,709.84	11,258.33	12,019.88
Return to Equity (%)	6.9	9.5	19.7
Return to Investment (%)	5.1	7.2	11.5
Debt/Capital Ratio	0.27	0.32	0.40

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



## Dairy Characteristics by Milk Production Class

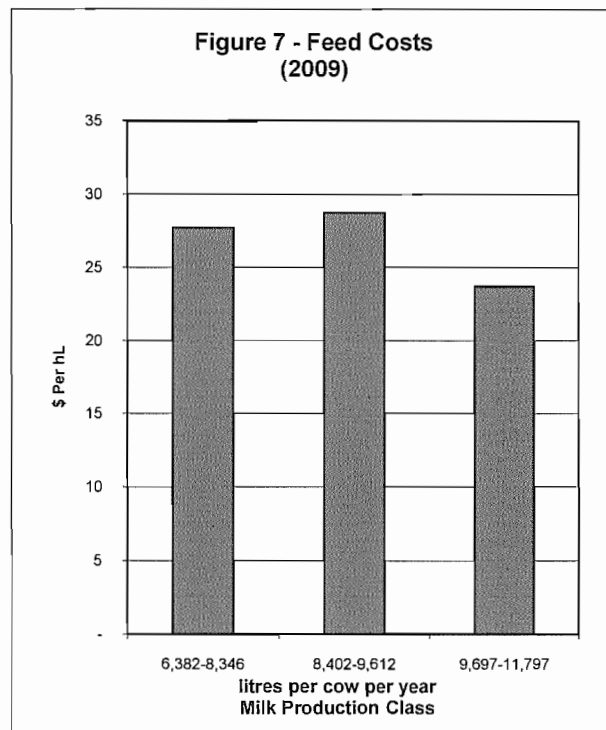
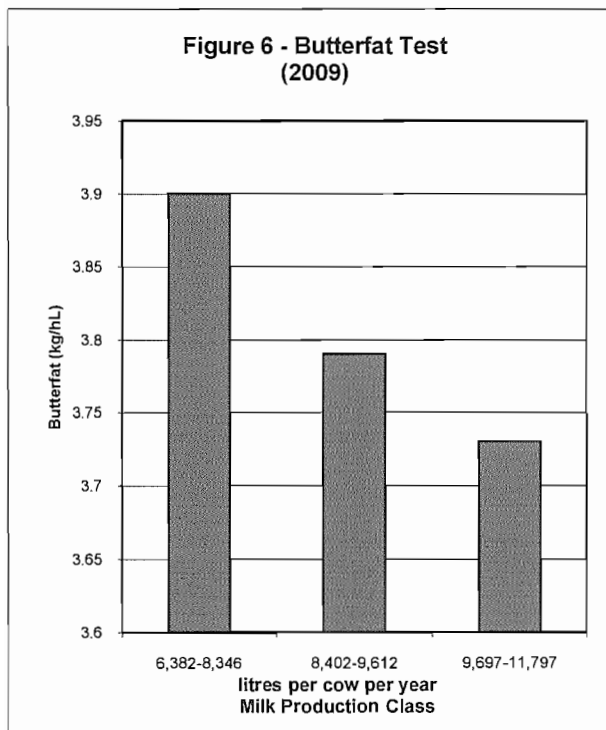
**Table 6 - Dairy Enterprise by Milk Production Class**

Milk Production ranged between 6,382 and 11,797 litres per cow per year. For this analysis, the sample group was split into the following three classes:

Bottom 1/3    6,382 - 8,346  
 Middle 1/3    8,402 - 9,612  
 Top 1/3        9,697 - 11,797

	Bottom 1/3 6,382-8,346	Middle 1/3 8,402-9,612	Top 1/3 9,697-11,797
Years in Dairy	18.15	18.00	21.32
Herd Size	125.73	133.99	137.33
Home Grown Feed (%)	78.4	58.7	80.1
<b>Butterfat Test (kg/hL)</b>	<b>3.90</b>	<b>3.79</b>	<b>3.73</b>
Gross Income (\$/hL)	79.29	78.05	76.72
Total Costs (\$/hL)	73.17	72.78	60.70
<b>Feed Costs (\$/hL)</b>	<b>27.70</b>	<b>28.74</b>	<b>23.67</b>
Labour (hrs/cow)	51.09	58.57	56.22
Investment (\$/cow)	10,694.11	12,796.17	12,497.78
Return to Equity (%)	9.3	5.5	21.3
Return to Investment (%)	5.5	4.2	14.1
Debt/Capital Ratio	0.35	0.38	0.27

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





## Dairy Characteristics by Gross Income Class

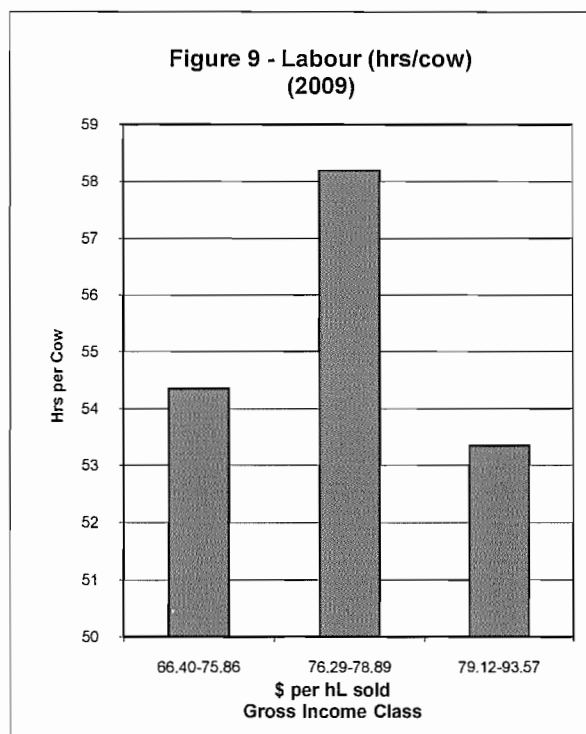
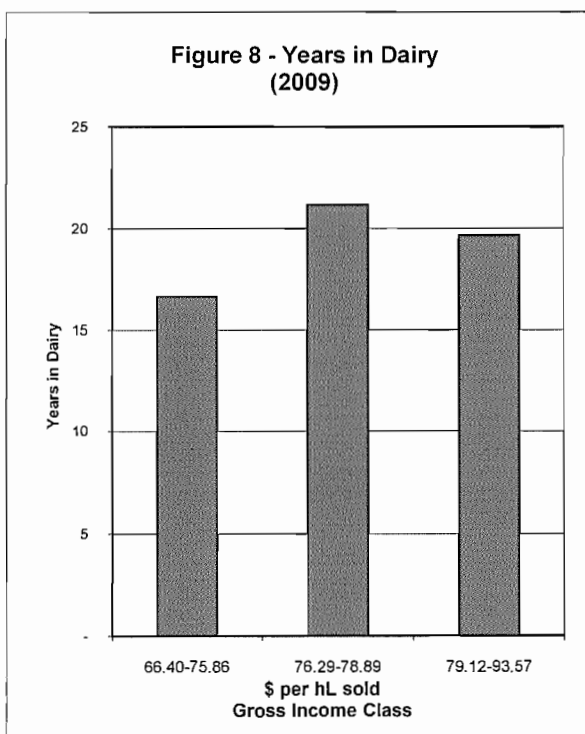
**Table 7 - Dairy Enterprise by Gross Income Class**

Gross Income ranged between \$66.40 and \$93.57 per hL sold. For this analysis, the sample group was split into the following three classes:

Bottom 1/3      66.40 - 75.86  
 Middle 1/3     76.29 - 78.89  
 Top 1/3        79.12 - 93.57

	Bottom 1/3 66.40-75.86	Middle 1/3 76.29-78.89	Top 1/3 79.12-93.57
<b>Years in Dairy</b>	<b>16.65</b>	<b>21.18</b>	<b>19.65</b>
Herd Size	141.86	145.75	109.44
Milk Production (litres/yr)	9,279.45	9,522.61	8,320.49
Home Grown Feed (%)	78.1	72.4	66.8
Butterfat Test (kg/hL)	3.71	3.76	3.96
Total Costs (\$/hL)	67.00	68.27	71.38
Feed Costs(\$/hL)	25.36	26.76	27.99
<b>Labour (hrs/cow)</b>	<b>54.34</b>	<b>58.19</b>	<b>53.35</b>
Investment (\$/cow)	11,437.52	12,971.52	11,579.01
Return to Equity (%)	11.0	13.5	11.6
Return to Investment (%)	6.5	8.6	8.7
Debt/Capital Ratio	0.42	0.35	0.23

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



## Dairy Characteristics by Total Cost Class

**Table 8 - Dairy Enterprise by Total Cost Class**

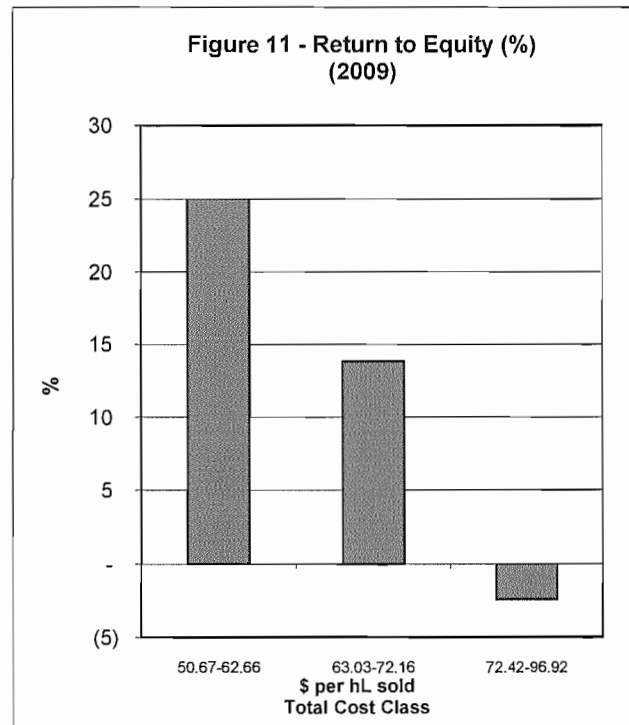
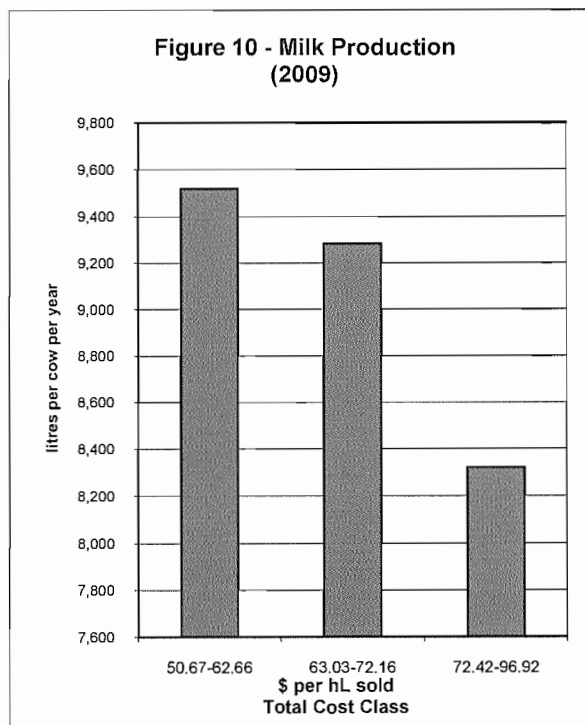
Total Cost ranged between \$50.67 and \$96.92 per hL sold. For this analysis, the sample group was split into the following three classes:

Top 1/3            50.67 - 62.66  
 Middle 1/3        63.03 - 72.16  
 Bottom 1/3        72.42 - 96.92

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

	Top 1/3 50.67-62.66	Middle 1/3 63.03-72.16	Bottom 1/3 72.42-96.92
Years in Dairy	22.62	18.12	16.74
Herd Size	162.88	138.66	95.51
<b>Milk Production (litres/yr)</b>	<b>9,519.73</b>	<b>9,282.08</b>	<b>8,320.74</b>
Home Grown Feed (%)	80.5	74.9	61.8
Butterfat Test (kg/hL)	3.75	3.83	3.85
Gross Income (\$/hL)	78.09	76.96	79.02
Feed Costs (\$/hL)	23.70	26.86	29.55
Labour (hrs/cow)	42.53	58.99	64.37
Investment (\$/cow)	12,121.45	10,423.96	13,442.64
<b>Return to Equity (%)</b>	<b>25.0</b>	<b>13.8</b>	<b>(2.4)</b>
Return to Investment (%)	16.4	8.2	(0.8)
Debt/Capital Ratio	0.30	0.34	0.36

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



## Dairy Characteristics by Investment Class

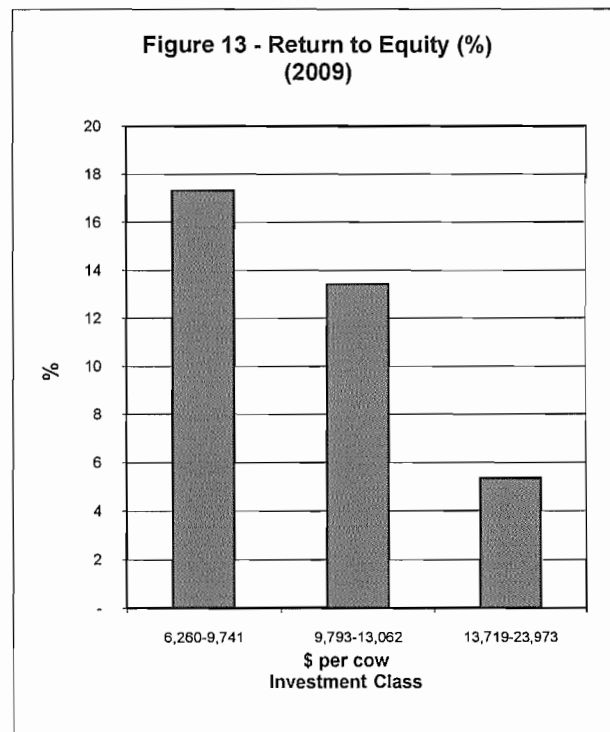
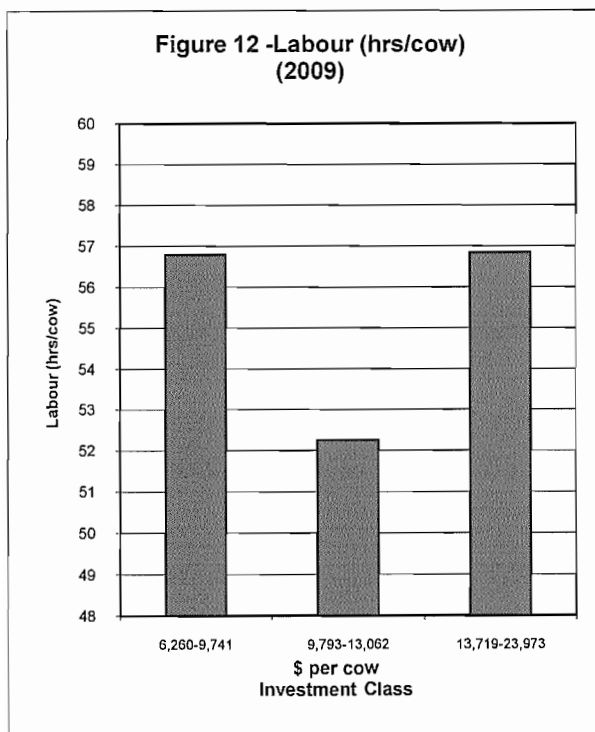
**Table 9 - Dairy Enterprise by Investment Class**

Investment per cow ranged between \$6,260 and \$23,973. For this analysis, the sample group was split into the following three classes:

Bottom 1/3      6,260 - 9,741  
 Middle 1/3     9,793 - 13,062  
 Top 1/3        13,719 - 23,973

	Bottom 1/3 6,260-9,741	Middle 1/3 9,793-13,062	Top 1/3 13,719-23,973
Years in Dairy	18.53	20.50	18.44
Herd Size	130.50	143.99	122.55
Milk Production (litres/yr)	8,434.45	9,366.59	9,321.50
Home Grown Feed (%)	74.1	76.8	66.3
Butterfat Test (kg/hL)	3.85	3.77	3.80
Gross Income (\$/hL)	77.81	78.05	78.20
Total Costs (\$/hL)	67.35	67.81	71.50
Feed Costs (\$/hL)	27.23	27.27	25.59
<b>Labour (hrs/cow)</b>	<b>56.79</b>	<b>52.25</b>	<b>56.84</b>
<b>Return to Equity (%)</b>	<b>17.3</b>	<b>13.4</b>	<b>5.3</b>
Return to Investment (%)	10.9	8.8	4.1
Debt/Capital Ratio	0.29	0.38	0.33

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



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

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

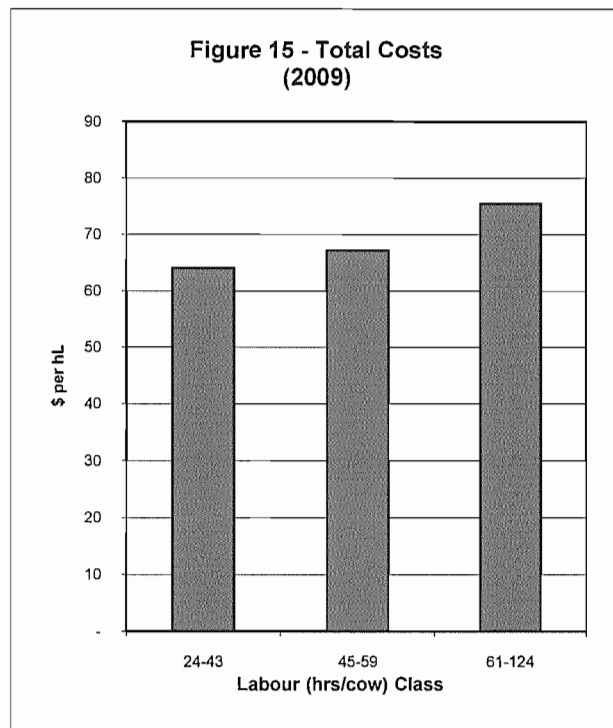
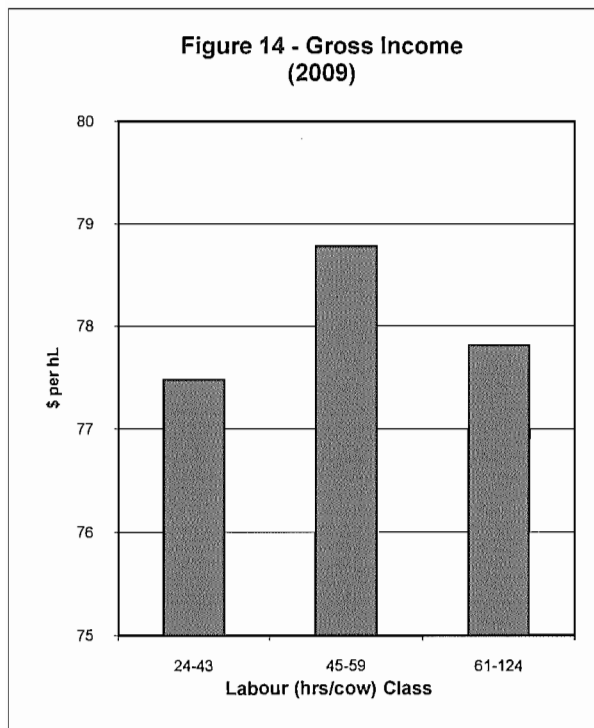
Labour (hrs/cow) ranged between 24 and 124.

For this analysis, the sample group was split into the following three classes:

Bottom 1/3      24 - 43  
 Middle 1/3     45 - 59  
 Top 1/3        61 - 124

	Bottom 1/3 24-43	Middle 1/3 45-59	Top 1/3 61-124
Years in Dairy	18.29	19.71	19.47
Herd Size	173.12	140.76	83.16
Milk Production (litres/yr)	8,924.41	8,739.29	9,458.85
Home Grown Feed (%)	74.1	73.8	69.4
Butterfat Test (kg/hL)	3.79	3.84	3.79
<b>Gross Income (\$/hL)</b>	<b>77.48</b>	<b>78.78</b>	<b>77.81</b>
<b>Total Costs (\$/hL)</b>	<b>64.04</b>	<b>67.17</b>	<b>75.44</b>
Feed Costs (\$/hL)	27.17	25.08	27.85
Investment (\$/cow)	11,464.86	12,294.57	12,228.62
Return to Equity (%)	17.2	16.6	2.3
Return to Investment (%)	11.3	9.4	3.1
Debt/Capital Ratio	0.36	0.39	0.25

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



## Detailed Management Factors, Northern and Southern Alberta

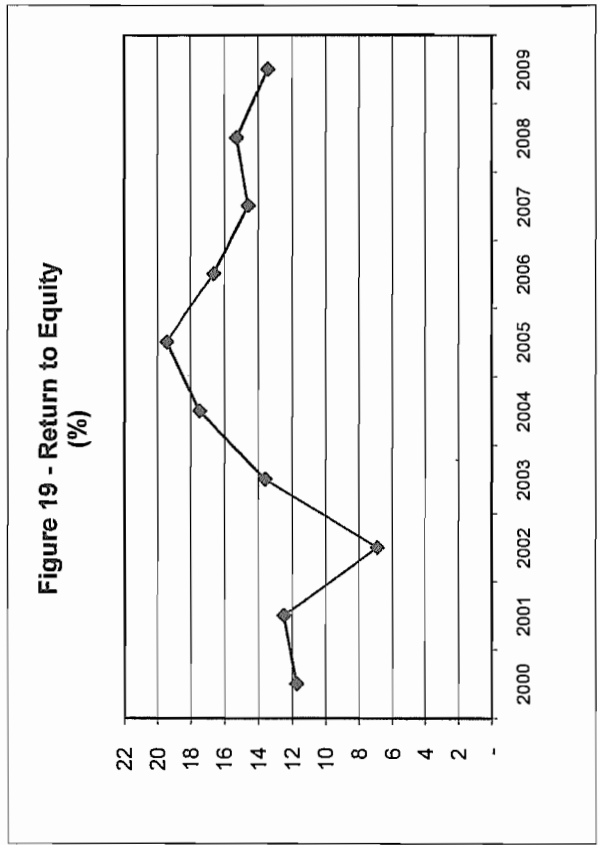
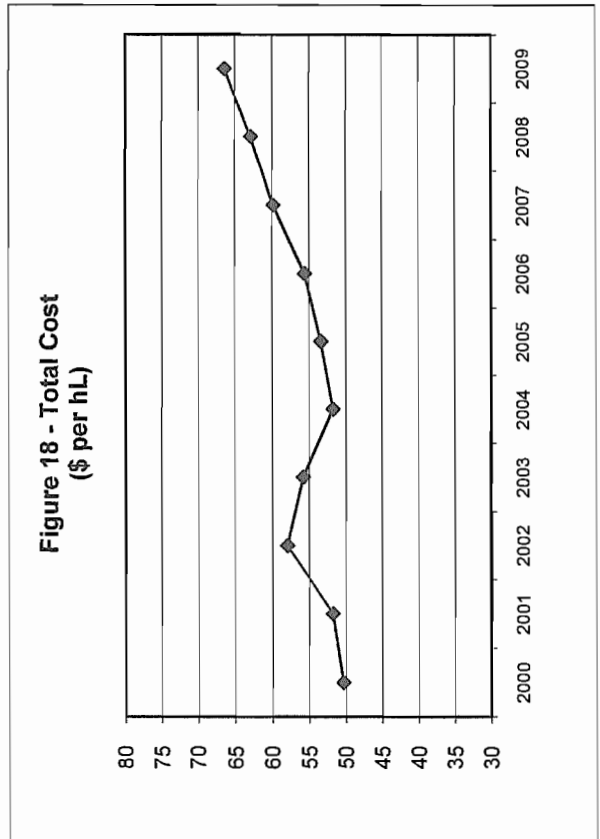
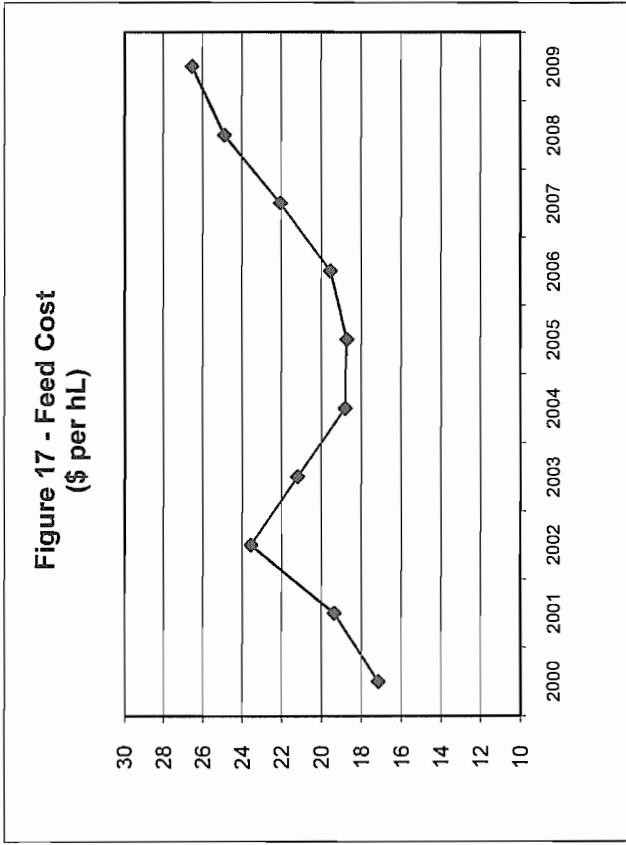
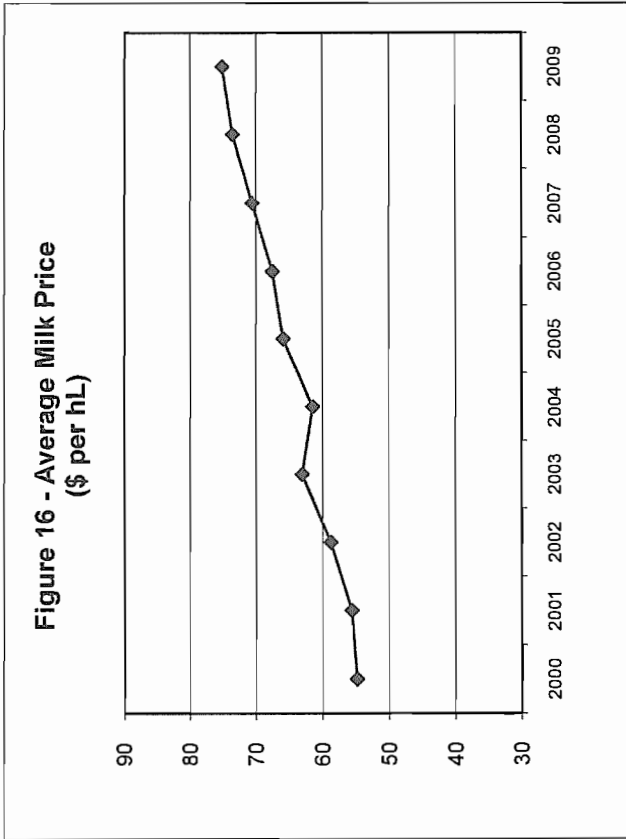
Table 11 provides a further examination of regional differences from a management perspective.

**Table 11**

### **Detailed Management Factors, Northern and Southern Alberta, 2009**

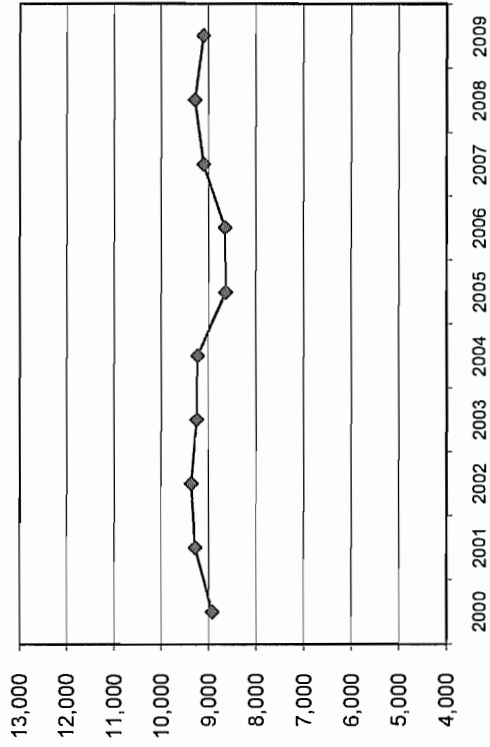
	<b>Northern Alberta</b>	<b>Southern Alberta</b>
Herd Size	116.19	143.66
Milk Production (litres/cow/year)	8,627.42	9,380.05
Feed Conversion (litres/kg)	2.14	2.19
Labour Productivity (litres/hr)	163.39	192.96
Labour Hours/Cow(hrs)	52.80	48.61
Investment/Cow (\$/cow)	11,356.54	12,154.87
Milk Production/\$ Invest (litres/\$)	0.76	0.77
Feed Costs (\$/cow)	2,114.17	2,462.60
Purchased Barley (\$/tonne)	162.90	156.41
Cost of Purchased Alfalfa Hay (\$/tonne)	131.95	136.44
Home Grown Roughage (%)	53.4	68.9
Butterfat Test (kg/hL)	3.81	3.81
Protein (kg/hL)	3.29	3.30
LOS (kg/hL)	5.66	5.68
Total Costs (\$/hL)	68.25	65.48
Contribution Margin (\$/hL)	22.20	23.76
Return to Investment (%)	19.1	11.0
Return to Equity (\$/hL)	9.25	12.08
Return to Equity (%)	11.6	14.3
Debt to Asset Ratio	0.42	0.37

# Historical Economic Trends

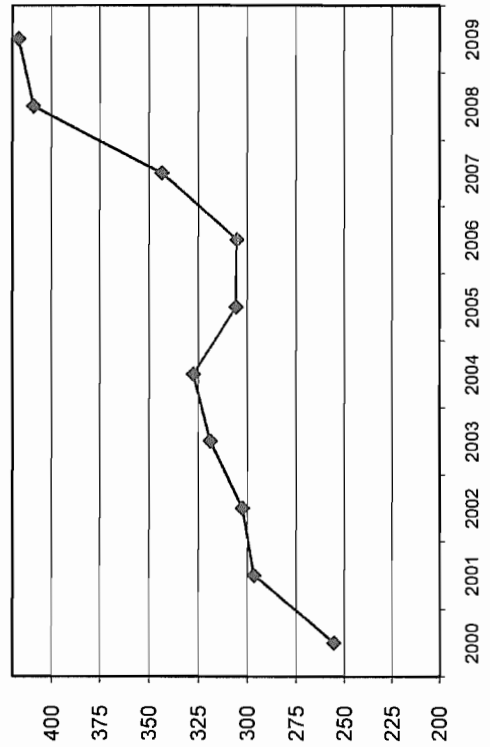


Note: large spikes for 2002 are result of the drought experienced at that time, resulting in higher feed costs and lower Return to Equity

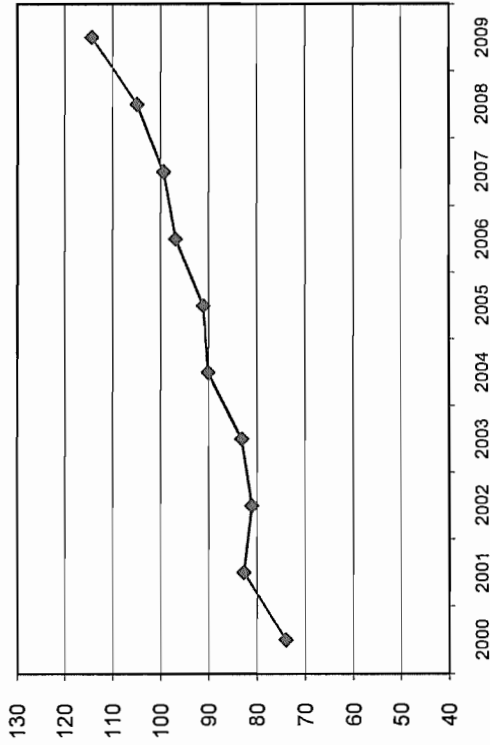
**Figure 21 - Milk Production  
(litres/cow per year)**



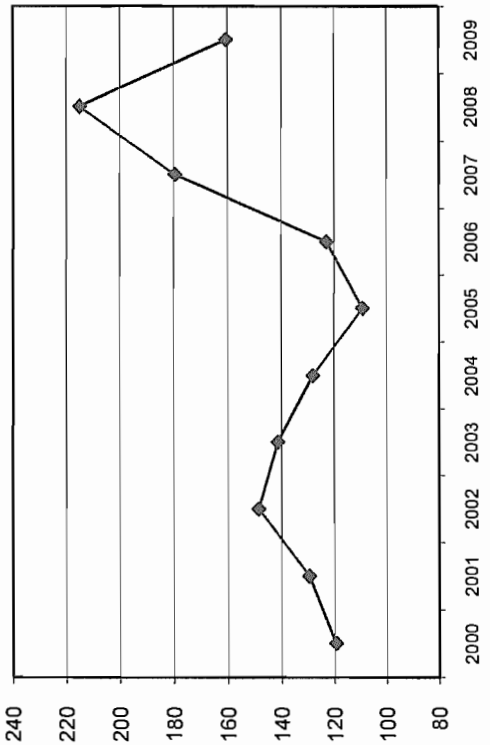
**Figure 23 - Cost of Dairy Ration  
(\$ per tonne)**



**Figure 20 - Median Size of Dairy Herd**



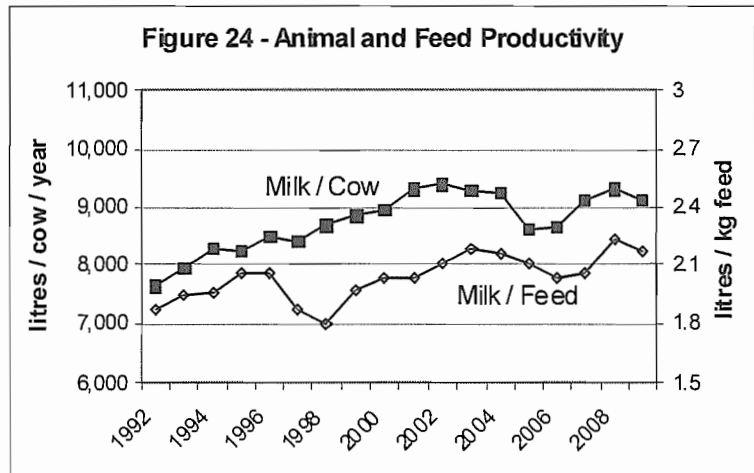
**Figure 22 - Purchased Barley Cost  
(\$ per tonne)**



## Milk Productivity Factors

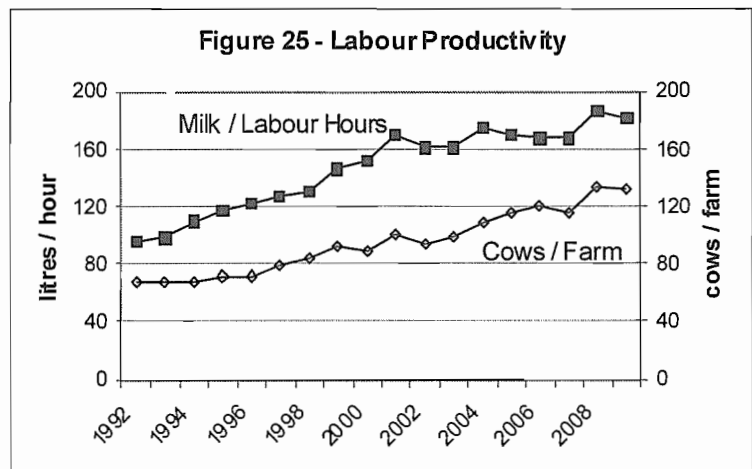
A number of management factors related to milk production are reported in Table 3 of Appendix A. They relate the amount of milk produced to three management inputs: feed, labour and capital. While these results reflect the participants in the study group, which changes over time, they are a fair representation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

Figure 24 shows that milk productivity per cow increased steadily from 1992 to 2001, with a total gain of 22%. After levelling off for four years, productivity dipped in 2005, rebounding in 2007. Many factors can affect milk productivity, including poor feed quality, housing changes, temperature/weather fluctuations, and cow stress. A decrease in quota allotment or adjusting to the daily quota system could also lead to management decisions to lower production for a period of time.



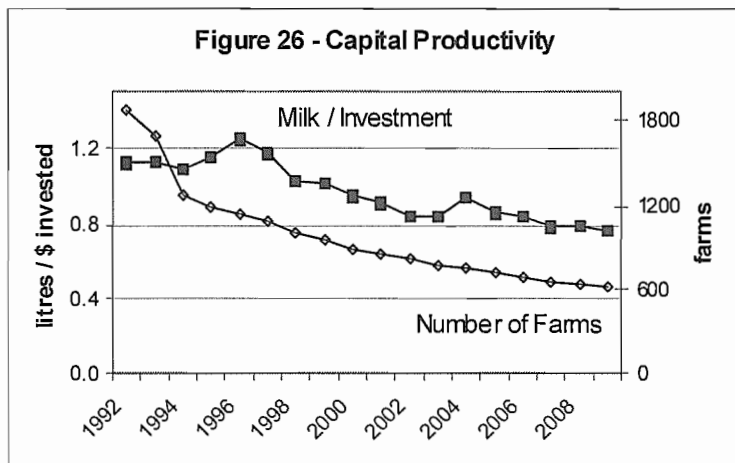
The feed conversion rates (or productivity) generally improved over the 17-year period, resulting in slightly higher milk production per unit of feed. However, there have been several dips in the feed conversion rates (1998, 2006 and 2009).

Figure 25 shows the amount of milk produced for each hour of labour on dairy farms. Labour productivity increased dramatically from 1993 to 2001. The figure also shows how the scale of dairy farms has increased. As farm size increased, each employee has been able to manage a larger number of dairy cows.





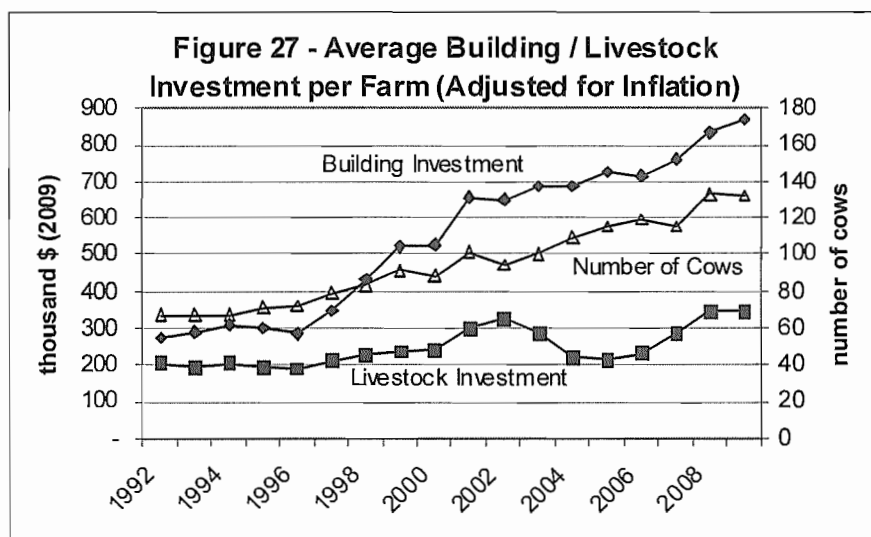
Labour intensity has gradually been traded for capital intensity (Figure 26). While labour productivity increased through 2001, capital productivity declined. Dairy producers were investing in more capital equipment, which allowed them to handle greater herd sizes per employee.



## 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) was very stable in the early years. Then, between 1996 and 2001, total investment climbed dramatically, increasing by 132%.

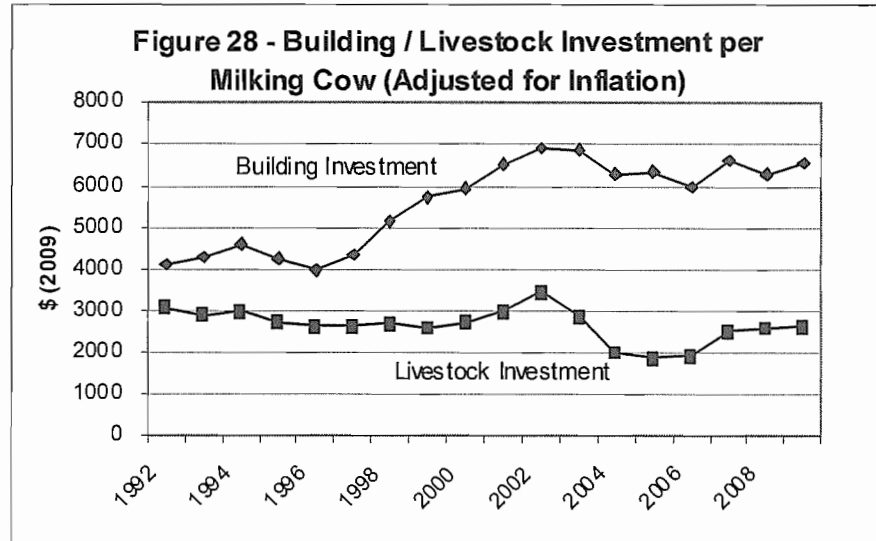


During this time, there was an increase in construction of new facilities, either by those already in Alberta or by those moving to the province from abroad. This was also the time of the first installation of robotic milkers on Alberta farms. This period coincided with a slightly higher rate in the expansion of herd sizes. After 2001, the average value of dairy buildings rose more slowly, despite continued growth in the average herd size. Total building values rose again from 2007 through 2009, partly due to a significant jump in the Dairy Cost Study average herd size in 2008.

The total value of livestock per farm (adjusted for inflation) was flat during the mid 1990s. Livestock inventory values grew significantly through 2002. However, they dropped by one-third in the wake of the BSE crisis despite an increase in cows per farm. They rebounded in 2007 and 2008.

### Per Milking Cow

Figure 28 shows average building and livestock investments per milking cow. It clearly shows how average building values per cow increased dramatically in the middle years, while remaining relatively flat in the early and later years.



Between 1992 and 2001, livestock values (adjusted for inflation) were generally flat. They gained in value briefly in 2002. However, after the appearance of BSE in 2003, livestock values, especially for cull cows and replacement heifers, dropped dramatically. Livestock values increased in 2007 but continue to be slightly lower than the previous decade.

## Dairy Enterprise Investment and Debt Levels

Total dairy farm investment (excluding quota) remained stable at \$1,570,479 per farm in 2009, compared to an average of \$1,538,219 in 2008. Of this total amount, 73 percent was comprised of buildings and equipment investment, 22 percent referred to livestock investment, the remaining 5 percent being invested in land and supplies. On a per cow basis, this works out to \$11,866 (Table 12).

**Table 12**  
**Annual Investment and Debt on Dairy Farms**

	2007	2008	2009
	- - - \$ Per Cow - - -		
Land	503	404	421
Buildings and Equipment	8,454	8,444	8,704
Livestock	2,445	2,673	2,625
Supplies	113	124	116
<b>TOTAL</b>	<b>11,515</b>	<b>11,645</b>	<b>11,866</b>
Debt	3,515	3,811	4,588
Equity	8,000	7,834	7,278
<b>TOTAL</b>	<b>11,515</b>	<b>11,645</b>	<b>11,866</b>

The debt/capital ratio measures the extent of external financing on dairy farms in Alberta. This ratio was 39 per cent in 2009, a substantial increase from 2008. As shown in Table 12, the largest investment increase was in buildings and equipment. For participants on the study in 2009, this primarily came from the purchase of robotic milkers, and new barn construction or additions.

## Debt Repayment Capacity

The acceptable debt load or repayment capacity of a dairy enterprise can be measured by the contribution margin. Contribution margin is the difference between gross income and variable costs. Therefore, it represents the amount of money available to pay for capital assets - rent, mortgage payments (principle and interest), and taxes. The amount of cash remaining after capital assets payments is the producer's return to owner equity, or profit. A summary of contribution margins for the dairy years 2007, 2008, and 2009 is presented in Table 13.

**Table 13**  
**Summary of Average Costs and Returns in Alberta**  
**2007 - 2009**

	2007	2008	2009	2007-2009
	----- \$ Per Cow -----			
<b>A. Gross Income</b>	6458	6878	6825	6720
<b>B. Feed Costs</b>	1948	2249	2336	2178
<b>C. Variable Costs</b>	2367	2445	2444	2419
 <b>Contribution Margin</b>	 2141	 2184	 2044	 2123
<b>(A - B - C)</b>				

The contribution margin can be used to determine the amount of debt load that a farm enterprise can carry. Table 14 shows the total debt load that a farm enterprise can carry on a per cow basis at various interest rates and various cow productivity levels. It is based on the average costs and returns between 2007 and 2009. The assumptions behind the analysis are that feed costs vary directly with the level of production and market values, while other operating costs such as labour, maintenance, and repairs remain relatively unchanged for the past three years at \$2,419 per cow.

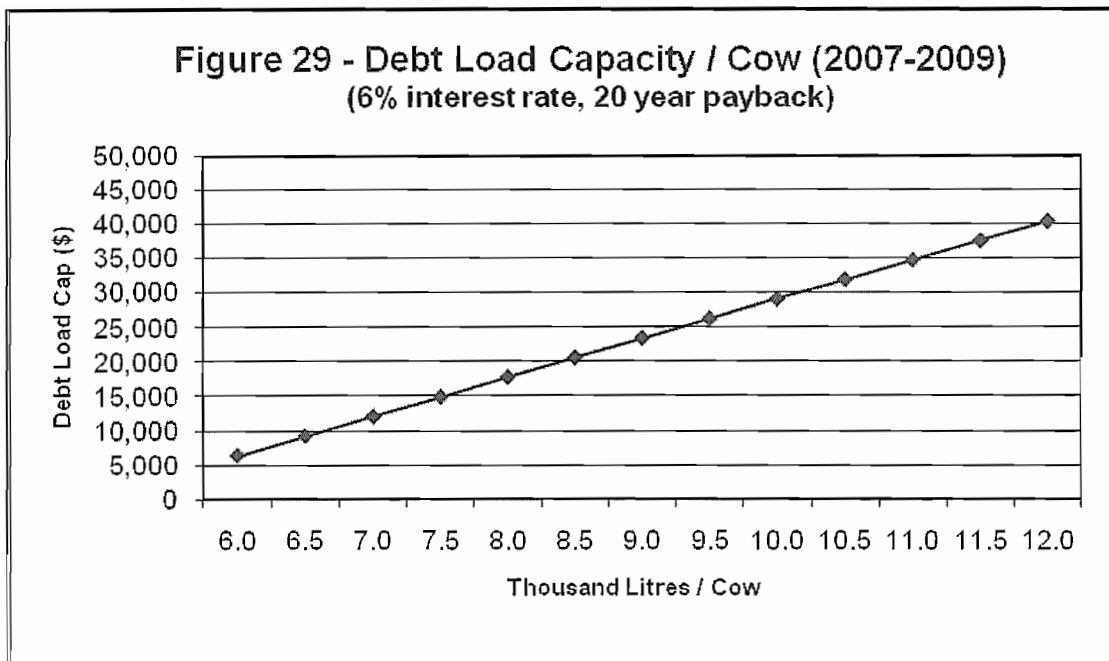
**Table 14**  
**Acceptable Total Debt-Load per Cow in Alberta, 2007-2009\***

Milk Productivity (litres/cow)	Interest Rates					
	4%	5%	6%	7%	8%	9%
6000	7,519	6,895	6,346	5,861	5,432	5,051
6500	10,886	9,982	9,187	8,486	7,864	7,312
7000	14,252	13,069	12,028	11,110	10,296	9,573
7500	17,618	16,156	14,869	13,734	12,728	11,834
8000	20,984	19,242	17,710	16,358	15,160	14,095
8500	24,351	22,329	20,551	18,982	17,592	16,356
9000	27,717	25,416	23,392	21,606	20,024	18,617
9500	31,083	28,503	26,233	24,230	22,456	20,878
10000	34,449	31,590	29,074	26,854	24,887	23,139
10500	37,816	34,677	31,915	29,478	27,319	25,400
11000	41,182	37,763	34,756	32,102	29,751	27,662
11500	44,548	40,850	37,598	34,726	32,183	29,923
12000	47,914	43,937	40,439	37,350	34,615	32,184

\* With a 20 year repayment period

For example, at a milk production level of 8,000 litres per cow, the contribution margin would be \$1,544 per cow. This margin, if amortized over 20 years at 6% interest, results in a debt carrying capacity of \$17,710 per cow.

Figure 24 shows the impact of milk productivity on the debt load carrying capacity of dairy enterprises given an interest rate of 6%. 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 \$15,000 per cow, then at an interest rate of 6%, this amount of debt per cow would be supported at production levels of about 7,525 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 \$28,660 per cow (the average value of total production quota for one cow in the 2009 Dairy Cost Study) is added to current debt of \$4,588 per cow, the total amount of debt load per cow would be \$33,248. The ability to carry this amount of debt per cow is dependent upon the prevailing interest rate and the productivity of each cow carrying debt. As illustrated in Table 14, this level of debt would require a production level of about 10,740 litres per cow, assuming an interest rate of 6%.

## Impact of Quota Values on Dairy Returns

The cost and return analysis in this study does not include any value for milk quota. However, new entrants into the dairy business would have to purchase quota. When the financing of these quota purchases (at 2009 Dairy Cost Study total production quota average price) is taken into account, the average rate of return for new entrants would be a negative 7.7% (Table 15). This means that the borrowing costs of capital used to purchase quota exceeded the financial returns obtained from producing milk. The assumption in this analysis is that all funds needed to purchase quota were borrowed at 5.37%, the average interest rate in the study.

**Table 15**

### Impact of Quota Value on Dairy Returns, 2009

	2009 Study Average	Including Quota Value*
--- \$ per Farm ---		
Dairy Investment	1,570,479	5,363,616
Debt	607,187	4,400,324
Equity	963,292	963,292
--- \$ per hL Sold ---		
Equity	82.68	82.68
Gross Income	77.54	77.54
Production Costs	66.43	66.43
Interest Cost for Quota		17.48
Potential Total Cost	66.43	83.91
Return to Equity(\$ per hL)	11.11	-6.37
Return to Equity (%)	13.4	-7.7

\*Applicable to new entrants who borrow 100% of funds needed to purchase total production quota at the average value from the 2009 Dairy Cost Study of \$32,208 per kg/day (\$88.24 per kg.)





## **APPENDIX A**

### **2009 Dairy Cost Study**



**Alberta**  
**2009 Dairy Cost Study - Business Analysis**  
**51 Participants**  
**Table 1 Dairy Enterprise Costs and Returns**

	TOTAL ENTERPRISE	PER COW	PER HL SOLD	PERCENT FROM INCOME
<b>INCOME:</b>				
MILK SALES	879,438.89	6,644.81	75.49	
POOL ADJUSTMENTS (+ -)	(3,935.81)	(29.74)	(.34)	
MISCELLANEOUS RECEIPTS	6,611.87	49.96	.57	
NET CATTLE SALES (+ -)	18,921.99	142.97	1.62	
NET INVENTORY CHANGE (+ -)	2,287.15	17.28	.20	
<b>GROSS INCOME -----</b>	<b>903,324.10</b>	<b>6,825.28</b>	<b>77.54</b>	<b>100.00</b>
<b>EXPENSES:</b>				
GRAIN	38,722.62	292.58	3.32	
COMPLETE FEED	98,404.48	743.52	8.45	
SUPPLEMENT	44,303.15	334.74	3.80	
MINERALS & VITAMINS	4,490.47	33.93	.39	
ROUGHAGE	121,397.05	917.24	10.42	
PROCESSING COSTS	1,935.47	14.62	.17	
<b>TOTAL FEED COSTS -----</b>	<b>309,253.24</b>	<b>2,336.64</b>	<b>26.54</b>	<b>34.24</b>
BEDDING AND SUPPLIES	26,923.25	203.43	2.31	
BREEDING	9,770.96	73.83	.84	
VET. AND MEDICINE	18,146.07	137.11	1.56	
MILK HAULING	29,273.15	221.18	2.51	
PRODUCER'S FEES	20,907.42	157.97	1.79	
UTILITIES	17,238.24	130.25	1.48	
FUEL, OIL, LUBE	10,307.29	77.88	.88	
BLDG. & MACH. REPAIRS	26,843.48	202.82	2.30	
MISCELLANEOUS	34,034.15	257.15	2.92	
<b>TOTAL OTHER VARIABLE COSTS ----</b>	<b>193,444.01</b>	<b>1,461.61</b>	<b>16.60</b>	<b>21.41</b>
HIRED LABOUR	40,565.82	306.50	3.48	
FAMILY LABOUR	89,518.53	676.38	7.68	
<b>TOTAL LABOUR COSTS -----</b>	<b>130,084.34</b>	<b>982.88</b>	<b>11.17</b>	<b>14.40</b>
<b>TOTAL VARIABLE COSTS</b>	<b>632,781.60</b>	<b>4,781.13</b>	<b>54.31</b>	<b>70.05</b>
RENT	1,748.49	13.21	.15	
TAXES AND INSURANCE	16,782.36	126.80	1.44	
DEPRECIATION	89,998.02	680.00	7.72	
INTEREST ( CAP.DEBT)	32,625.21	246.51	2.80	
<b>TOTAL CAPITAL COSTS -----</b>	<b>141,154.09</b>	<b>1,066.52</b>	<b>12.12</b>	<b>15.63</b>
<b>TOTAL PRODUCTION COSTS</b>	<b>773,935.69</b>	<b>5,847.66</b>	<b>66.43</b>	<b>85.68</b>
CONTRIBUTION MARGIN (\$)	270,542.50	2,044.15	23.22	
RETURN TO EQUITY (\$)	129,388.41	977.63	11.11	14.32
MILK PRICE			75.15	
INVENTORY ADJUSTMENT			2.39	
RETURN TO EQUITY (%)			13.43	
AVERAGE CAP. DEBT INTEREST RATE (%)			5.37	

**Alberta  
2009 Dairy Cost Study - Business Analysis  
51 Participants**

**Table 2 Statement of Investment**

**LAND BUILDINGS & EQUIPMENT**

	AGE	DEPRECIATION	DAIRY INVESTMENT
DAIRY BUILDINGS	10.84	35,338.37	868,198.63
POWER MACHINERY	7.19	16,901.05	114,604.34
DAIRY EQUIPMENT	8.53	26,080.97	115,058.91
OTHER EQUIPMENT	7.17	11,677.64	54,164.19
<b>TOTAL EQUIPMENT</b>	<b>7.69</b>	<b>54,659.65</b>	<b>283,827.44</b>
LAND			55,667.11
SUPPLIES			15,309.45
<b>** SUBTOTAL **</b>		<b>89,998.02</b>	<b>1,223,002.63</b>

**DAIRY LIVESTOCK**

	--- BEGIN YEAR ---		--- END OF YEAR ---		AVERAGE VALUE
	NUMBER	VALUE	NUMBER	VALUE	
COWS	135.53	247,119.74	134.45	245,153.37	246,136.56
BRED HEIFERS	34.76	55,623.53	36.86	58,980.39	57,301.96
OPEN HEIFERS	33.94	33,941.18	34.53	34,529.41	34,235.29
HEIFER CALVES	38.33	7,666.67	41.37	8,274.51	7,970.59
BULL CALVES	7.22	216.47	5.08	152.35	184.41
BULLS	1.18	1,764.71	1.02	1,529.41	1,647.06
<b>** SUBTOTAL **</b>	<b>250.96</b>	<b>346,332.29</b>	<b>253.31</b>	<b>348,619.45</b>	<b>347,475.87</b>

<b>TOTAL DAIRY INVESTMENT</b> -----	<b>1,570,478.50</b>
CAPITAL LOANS	607,186.72
OPERATOR EQUITY	963,291.78
INVESTMENT PER COW	11,866.13
DEBT/CAPITAL RATIO	.39
CAPITAL TURNOVER ( YR )	1.74

**HERD SIZE**

	Average	Median
NUMBER OF DAIRY COWS	132.35	114.33
NUMBER OF ANIMAL UNITS	196.45	166.67
DRY COWS ( % )	13.67	
CALF CROP ( % )	99.74	
PASTURE PER COW ( AC. )	.16	

**CATTLE SALES & PURCHASES**

	NUMBER SOLD	SELLING PRICE	NUMBER PURCHASED	PURCHASE PRICE
COWS	34.82	557.82	2.20	1,966.46
BRED HEIFERS	1.69	1,599.07	.53	1,950.00
OPEN HEIFERS	.55	972.39	.14	1,378.57
HEIFER CALVES	.84	219.19	.04	127.50
BULL CALVES	42.12	38.29	.00	.00
BULLS	.90	1,434.48	.63	2,040.02
<b>TOTAL VALUE</b>		<b>25,747.08</b>		<b>6,825.09</b>

**Alberta**  
**2009 Dairy Cost Study - Business Analysis**  
**51 Participants**  
**Table 3 Labour and Management**

**LABOUR**

	HOURS	VALUE	HOURLY RATE
OPERATOR LABOUR	2,823.03	56,460.69	20.00
HIRED LABOUR	2,095.97	40,565.82	19.35
FAMILY UNPAID LABOUR	1,715.33	33,057.84	19.27
<b>TOTAL</b>	<b>6,634.33</b>	<b>130,084.34</b>	<b>19.61</b>
RETURN TO FAMILY LABOUR	24.89		
MAN EQUIVALENTS	2.65		
LABOUR HOURS PER COW	50.13		
YEARS FARMING	19.16		

**MILK PRODUCTION**

	HL.	% OF TOTAL	VALUE	AVERAGE PRICE / HL
MILK SALES	11,650.35	96.65	879,438.89	75.49
OTHER MILK PRODUCED	404.03	3.35		
<b>TOTAL</b>	<b>12,054.37</b>	<b>100.00</b>		

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

BUTTERFAT TEST	3.81 KG / HL	11.65
PROTEIN	3.30 KG / HL	3.63
L.O.S.	5.67 KG / HL	3.50
MILK PRODUCTION PER COW	9,107.97 LITRES / YEAR	

**QUOTA INFORMATION**

TPQ HOLDINGS	117.77 KG / DAY
TPQ PRICE	32,208.01 \$ / KG / DAY
CREDIT PRICE	8.72 \$ / KG

**MANAGEMENT FACTORS**

COST PER HL	66.43
MILK/FEED (KG) RATIO	2.17 LITRES
MILK/LABOUR (HR) RATIO	181.70 LITRES
MILK/CAPITAL (\$) RATIO	.77 LITRES

**Alberta  
2009 Dairy Cost Study - Business Analysis  
51 Participants  
Table 4 Feed Report**

	--- PURCHASED ---		--- HOMEGROWN---	
CONCENTRATES	QUANTITY (TONNES)	PRICE	QUANTITY (TONNES)	PRICE
OATS	5.05	247.40	1.14	140.87
BARLEY	76.48	160.55	81.03	148.95
WHEAT	.86	49.29	.00	.00
MIXED GRAIN	.00	.00	.00	.00
BREW GRAIN (DRY EQ. )	6.16	200.06		
BEET PULP	.67	270.00		
OTHER PURCHASED	53.33	215.85		
DAIRY RATION	209.41	416.89		
CALF FEED	27.26	374.99		
MILK REPLACER	.31	2,861.95		
SUPPLEMENT	88.50	500.59		
MOLASSES	.00	.00		
SALT	.45	713.50		
MINERALS & VITAMINS	3.69	1,130.64		
<b>SUBTOTAL -----</b>	<b>472.16</b>	<b>173,690.78</b>	<b>82.17</b>	<b>12,229.95</b>
<b>ROUGHAGE</b>				
ALFALFA HAY	138.18	135.18	136.30	138.65
ALFALFA PELLETS	.04	275.00		
STRAW FED	11.03	56.54	5.19	36.83
GREENFEED	.00	.00	1.70	98.14
SILAGE/HAYLAGE (DRY EQ.)	197.80	121.50	465.25	126.38
<b>SUBTOTAL -----</b>	<b>347.04</b>	<b>43,345.04</b>	<b>608.44</b>	<b>78,052.01</b>
GRINDING & PROCESSING		1,935.47		
<b>GRAND TOTAL FEED COSTS -----</b>		<b>218,971.28</b>		<b>90,281.96</b>
BEDDING	136.03	56.00	85.39	37.46
AV. PRICE:	CONCENTRATE	335.40 \$/TONNE		
	ROUGHAGE	127.05 \$/TONNE		
FED PER COW:	CONCENTRATE	4.19 TONNES		
	ROUGHAGE	7.22 TONNES		
% HOME GROWN:	CONCENTRATE	14.82 %		
	ROUGHAGE	63.68 %		

## **APPENDIX B**

### **2009 Dairy Cost Study Northern Alberta**





**Northern Alberta**  
**2009 Dairy Cost Study - Business Analysis**  
**21 Participants**  
**Table 1 Dairy Enterprise Costs and Returns**

	TOTAL ENTERPRISE	PER COW	PER HL SOLD	PERCENT FROM INCOME
<b>INCOME:</b>				
MILK SALES	719,532.05	6,192.48	74.32	
POOL ADJUSTMENTS (+ -)	(3,200.26)	(27.54)	(.33)	
MISCELLANEOUS RECEIPTS	5,707.36	49.12	.59	
NET CATTLE SALES (+ -)	22,736.72	195.68	2.35	
NET INVENTORY CHANGE (+ -)	5,545.11	47.72	.57	
<b>GROSS INCOME -----</b>	<b>750,320.99</b>	<b>6,457.46</b>	<b>77.50</b>	<b>100.00</b>
<b>EXPENSES:</b>				
GRAIN	34,294.82	295.15	3.54	
COMPLETE FEED	90,535.34	779.17	9.35	
SUPPLEMENT	18,955.47	163.14	1.96	
MINERALS & VITAMINS	4,050.23	34.86	.42	
ROUGHAGE	93,730.44	806.67	9.68	
PROCESSING COSTS	4,088.14	35.18	.42	
<b>TOTAL FEED COSTS -----</b>	<b>245,654.43</b>	<b>2,114.17</b>	<b>25.37</b>	<b>32.74</b>
BEDDING AND SUPPLIES	23,756.03	204.45	2.45	
BREEDING	9,399.96	80.90	.97	
VET. AND MEDICINE	17,457.06	150.24	1.80	
MILK HAULING	24,910.98	214.39	2.57	
PRODUCER'S FEES	17,504.78	150.65	1.81	
UTILITIES	14,435.19	124.23	1.49	
FUEL, OIL, LUBE	7,279.54	62.65	.75	
BLDG. & MACH. REPAIRS	21,510.76	185.13	2.22	
MISCELLANEOUS	33,463.99	288.00	3.46	
<b>TOTAL OTHER VARIABLE COSTS ----</b>	<b>169,718.29</b>	<b>1,460.64</b>	<b>17.53</b>	<b>22.62</b>
HIRED LABOUR	35,102.49	302.10	3.63	
FAMILY LABOUR	84,940.00	731.02	8.77	
<b>TOTAL LABOUR COSTS -----</b>	<b>120,042.49</b>	<b>1,033.12</b>	<b>12.40</b>	<b>16.00</b>
<b>TOTAL VARIABLE COSTS</b>	<b>535,415.21</b>	<b>4,607.92</b>	<b>55.30</b>	<b>71.36</b>
RENT	2,934.72	25.26	.30	
TAXES AND INSURANCE	19,143.13	164.75	1.98	
DEPRECIATION	73,388.39	631.60	7.58	
INTEREST (CAP.DEBT)	29,842.80	256.83	3.08	
<b>TOTAL CAPITAL COSTS -----</b>	<b>125,309.04</b>	<b>1,078.44</b>	<b>12.94</b>	<b>16.70</b>
<b>TOTAL PRODUCTION COSTS</b>	<b>660,724.25</b>	<b>5,686.37</b>	<b>68.25</b>	<b>88.06</b>
CONTRIBUTION MARGIN (\$)	214,905.78	1,849.54	22.20	
RETURN TO EQUITY (\$)	89,596.74	771.09	9.25	11.94
MILK PRICE			73.99	
INVENTORY ADJUSTMENT			3.51	
RETURN TO EQUITY (%)			11.61	
AVERAGE CAP. DEBT INTEREST RATE (%)			5.45	

**Northern Alberta  
2009 Dairy Cost Study - Business Analysis  
21 Participants  
Table 2 Statement of Investment**

**LAND BUILDINGS & EQUIPMENT**

	AGE	DEPRECIATION	DAIRY INVESTMENT
DAIRY BUILDINGS	12.14	28,749.38	713,785.67
POWER MACHINERY	7.53	13,931.41	93,988.66
DAIRY EQUIPMENT	8.16	21,460.19	96,004.08
OTHER EQUIPMENT	6.93	9,247.40	43,261.77
TOTAL EQUIPMENT	7.67	44,639.01	233,254.51
LAND			71,849.88
SUPPLIES			15,746.81
<b>** SUBTOTAL **</b>		<b>73,388.39</b>	<b>1,034,636.87</b>

**DAIRY LIVESTOCK**

	--- BEGIN YEAR ---		--- END OF YEAR ---		AVERAGE VALUE
	NUMBER	VALUE	NUMBER	VALUE	
COWS	118.90	208,807.39	116.38	204,375.35	206,591.37
BRED HEIFERS	24.57	39,314.29	29.24	46,780.95	43,047.62
OPEN HEIFERS	26.24	26,238.10	28.38	28,380.95	27,309.52
HEIFER CALVES	32.43	6,485.71	35.67	7,133.33	6,809.52
BULL CALVES	12.76	382.86	5.81	174.29	278.57
BULLS	.62	928.57	.57	857.14	892.86
<b>** SUBTOTAL **</b>	<b>215.52</b>	<b>282,156.91</b>	<b>216.05</b>	<b>287,702.02</b>	<b>284,929.46</b>

<b>TOTAL DAIRY INVESTMENT</b> .....	<b>1,319,566.33</b>
CAPITAL LOANS	547,845.74
OPERATOR EQUITY	771,720.59
INVESTMENT PER COW	11,356.54
DEBT/CAPITAL RATIO	.42
CAPITAL TURNOVER ( YR )	1.76

**HERD SIZE**

	Average	Median
NUMBER OF DAIRY COWS	116.19	78.50
NUMBER OF ANIMAL UNITS	169.00	116.50
DRY COWS ( % )	18.16	
CALF CROP ( % )	101.76	
PASTURE PER COW ( AC. )	.25	

**CATTLE SALES & PURCHASES**

	NUMBER SOLD	SELLING PRICE	NUMBER PURCHASED	PURCHASE PRICE
COWS	32.67	551.67	.76	1,705.88
BRED HEIFERS	2.76	1,492.22	.10	3,100.00
OPEN HEIFERS	.43	607.97	.00	.00
HEIFER CALVES	.52	335.92	.05	105.00
BULL CALVES	40.57	37.21	.00	.00
BULLS	.43	850.25	.10	1,225.00
<b>TOTAL VALUE</b>		<b>24,453.34</b>		<b>1,716.62</b>

**Northern Alberta  
2009 Dairy Cost Study - Business Analysis  
21 Participants  
Table 3 Labour and Management**

**LABOUR**

	HOURS	VALUE	HOURLY RATE
OPERATOR LABOUR	2,687.71	53,754.29	20.00
HIRED LABOUR	1,807.68	35,102.49	19.42
FAMILY UNPAID LABOUR	1,640.00	31,185.71	19.02
<b>TOTAL</b>	<b>6,135.40</b>	<b>120,042.49</b>	<b>19.57</b>
RETURN TO FAMILY LABOUR	20.71		
MAN EQUIVALENTS	2.45		
LABOUR HOURS PER COW	52.80		
YEARS FARMING	19.31		

**MILK PRODUCTION**

	HL.	% OF TOTAL	VALUE	AVERAGE PRICE / HL
MILK SALES	9,681.27	96.58	719,532.05	74.32
OTHER MILK PRODUCED	343.32	3.42		
<b>TOTAL</b>	<b>10,024.59</b>	<b>100.00</b>		

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

BUTTERFAT TEST	3.81 KG / HL	11.65
PROTEIN	3.29 KG / HL	3.63
L.O.S.	5.66 KG / HL	3.49
MILK PRODUCTION PER COW	8,627.42 LITRES / YEAR	

**QUOTA INFORMATION**

TPQ HOLDINGS	98.13 KG / DAY
TPQ PRICE	32,664.63 \$ / KG / DAY
CREDIT PRICE	8.30 \$ / KG

**MANAGEMENT FACTORS**

COST PER HL	68.25
MILK/FEED (KG) RATIO	2.14 LITRES
MILK/LABOUR (HR) RATIO	163.39 LITRES
MILK/CAPITAL (\$) RATIO	.76 LITRES

**Northern Alberta  
2009 Dairy Cost Study - Business Analysis  
21 Participants  
Table 4 Feed Report**

<u>CONCENTRATES</u>	--- PURCHASED ---		--- HOMEGROWN---	
	QUANTITY (TONNES)	PRICE	QUANTITY (TONNES)	PRICE
OATS	12.14	248.06	1.31	131.05
BARLEY	118.32	162.90	29.69	131.59
WHEAT	.08	277.53	.00	.00
MIXED GRAIN	.00	.00	.00	.00
BREW GRAIN (DRY EQ. )	9.30	182.83		
BEET PULP	.00	.00		
OTHER PURCHASED	29.79	208.43		
DAIRY RATION	204.59	412.35		
CALF FEED	14.62	391.54		
MILK REPLACER	.13	3,419.13		
SUPPLEMENT	44.79	423.25		
MOLASSES	.00	.00		
SALT	.51	925.64		
MINERALS & VITAMINS	2.58	1,384.57		
SUBTOTAL -----	436.84	143,757.30	31.00	4,078.55
<u>ROUGHAGE</u>				
ALFALFA HAY	94.50	131.95	99.81	124.32
ALFALFA PELLETS	.09	275.00		
STRAW FED	20.55	50.51	1.15	43.25
GREENFEED	.00	.00	2.53	82.26
SILAGE/HAYLAGE (DRY EQ.)	247.55	129.72	311.58	113.68
SUBTOTAL -----	362.69	45,644.00	415.07	48,086.45
GRINDING & PROCESSING		4,088.14		
GRAND TOTAL FEED COSTS -----		193,489.44		52,165.00
BEDDING	168.04	53.95	55.46	43.76
AV. PRICE:	CONCENTRATE	316.00 \$/TONNE		
	ROUGHAGE	120.51 \$/TONNE		
FED PER COW:	CONCENTRATE	4.03 TONNES		
	ROUGHAGE	6.69 TONNES		
% HOME GROWN:	CONCENTRATE	6.63 %		
	ROUGHAGE	53.37 %		

## **APPENDIX C**

### **2009 Dairy Cost Study Southern Alberta**



**Southern Alberta  
2009 Dairy Cost Study - Business Analysis  
30 Participants  
Table 1 Dairy Enterprise Costs and Returns**

	TOTAL ENTERPRISE	PER COW	PER HL SOLD	PERCENT FROM INCOME
<b>INCOME:</b>				
MILK SALES	991,373.68	6,900.91	76.09	
POOL ADJUSTMENTS (+ -)	(4,450.70)	(30.98)	(.34)	
MISCELLANEOUS RECEIPTS	7,245.03	50.43	.56	
NET CATTLE SALES (+ -)	16,251.68	113.13	1.25	
NET INVENTORY CHANGE (+ -)	122.90	.86	.01	
<b>GROSS INCOME -----</b>	<b>1,010,542.59</b>	<b>7,034.35</b>	<b>77.56</b>	<b>100.00</b>
<b>EXPENSES:</b>				
GRAIN	41,822.08	291.12	3.21	
COMPLETE FEED	103,912.88	723.33	7.98	
SUPPLEMENT	62,046.53	431.90	4.76	
MINERALS & VITAMINS	4,798.65	33.40	.37	
ROUGHAGE	140,763.67	979.85	10.80	
PROCESSING COSTS	428.60	2.98	.03	
<b>TOTAL FEED COSTS -----</b>	<b>353,772.41</b>	<b>2,462.60</b>	<b>27.15</b>	<b>35.01</b>
BEDDING AND SUPPLIES	29,140.31	202.84	2.24	
BREEDING	10,030.66	69.82	.77	
VET. AND MEDICINE	18,628.37	129.67	1.43	
MILK HAULING	32,326.67	225.02	2.48	
PRODUCER'S FEES	23,289.26	162.12	1.79	
UTILITIES	19,200.38	133.65	1.47	
FUEL, OIL, LUBE	12,426.72	86.50	.95	
BLDG. & MACH. REPAIRS	30,576.39	212.84	2.35	
MISCELLANEOUS	34,433.25	239.69	2.64	
<b>TOTAL OTHER VARIABLE COSTS ----</b>	<b>210,052.01</b>	<b>1,462.16</b>	<b>16.12</b>	<b>20.79</b>
HIRED LABOUR	44,390.15	309.00	3.41	
FAMILY LABOUR	92,723.50	645.44	7.12	
<b>TOTAL LABOUR COSTS -----</b>	<b>137,113.65</b>	<b>954.44</b>	<b>10.52</b>	<b>13.57</b>
<b>TOTAL VARIABLE COSTS</b>	<b>700,938.07</b>	<b>4,879.20</b>	<b>53.80</b>	<b>69.36</b>
RENT	918.13	6.39	.07	
TAXES AND INSURANCE	15,129.82	105.32	1.16	
DEPRECIATION	101,624.77	707.41	7.80	
INTEREST ( CAP.DEBT)	34,572.90	240.66	2.65	
<b>TOTAL CAPITAL COSTS -----</b>	<b>152,245.63</b>	<b>1,059.78</b>	<b>11.69</b>	<b>15.07</b>
<b>TOTAL PRODUCTION COSTS</b>	<b>853,183.69</b>	<b>5,938.98</b>	<b>65.48</b>	<b>84.43</b>
CONTRIBUTION MARGIN (\$)	309,604.52	2,155.14	23.76	
RETURN TO EQUITY (\$)	157,358.90	1,095.37	12.08	15.57
MILK PRICE			75.75	
INVENTORY ADJUSTMENT			1.81	
RETURN TO EQUITY (%)			14.34	
AVERAGE CAP. DEBT INTEREST RATE (%)			5.33	

**Southern Alberta  
2009 Dairy Cost Study - Business Analysis  
30 Participants**

**Table 2 Statement of Investment**

<u>LAND BUILDINGS &amp; EQUIPMENT</u>	AGE	DEPRECIATION	DAIRY INVESTMENT
DAIRY BUILDINGS	10.19	39,950.66	976,276.51
POWER MACHINERY	7.04	18,979.79	128,989.31
DAIRY EQUIPMENT	8.72	29,315.51	128,398.08
OTHER EQUIPMENT	7.28	13,378.80	61,819.84
TOTAL EQUIPMENT	7.70	61,674.10	319,207.22
LAND			44,339.17
SUPPLIES			15,003.31
<b>** SUBTOTAL **</b>		<b>101,624.77</b>	<b>1,354,826.20</b>

<u>DAIRY LIVESTOCK</u>	--- BEGIN YEAR ---		--- END OF YEAR ---		AVERAGE
	NUMBER	VALUE	NUMBER	VALUE	VALUE
COWS	147.17	273,944.39	147.10	273,820.29	273,882.34
BRED HEIFERS	41.90	67,040.00	42.20	67,520.00	67,280.00
OPEN HEIFERS	39.33	39,333.33	38.83	38,833.33	39,083.33
HEIFER CALVES	42.47	8,493.33	45.37	9,073.33	8,783.33
BULL CALVES	3.33	100.00	4.57	137.00	118.50
BULLS	1.57	2,350.00	1.33	2,000.00	2,175.00
<b>** SUBTOTAL **</b>	<b>275.77</b>	<b>391,261.06</b>	<b>279.40</b>	<b>391,383.96</b>	<b>391,322.51</b>

TOTAL DAIRY INVESTMENT -----	1,746,148.71
CAPITAL LOANS	648,725.40
OPERATOR EQUITY	1,097,423.31
INVESTMENT PER COW	12,154.87
DEBT/CAPITAL RATIO	.37
CAPITAL TURNOVER ( YR )	1.73

<u>HERD SIZE</u>	Average	Median
NUMBER OF DAIRY COWS	143.66	132.75
NUMBER OF ANIMAL UNITS	215.66	210.71
DRY COWS ( % )	11.14	
CALF CROP ( % )	98.59	
PASTURE PER COW ( AC. )	.10	

<u>CATTLE SALES &amp; PURCHASES</u>	NUMBER SOLD	SELLING PRICE	NUMBER PURCHASED	PURCHASE PRICE
COWS	36.33	561.70	3.20	2,009.90
BRED HEIFERS	.93	1,820.39	.83	1,858.00
OPEN HEIFERS	.63	1,145.01	.23	1,378.57
HEIFER CALVES	1.07	179.06	.03	150.00
BULL CALVES	43.20	39.00	.00	.00
BULLS	1.23	1,576.59	1.00	2,094.35
<b>TOTAL VALUE</b>		<b>26,652.70</b>		<b>10,401.02</b>



**Southern Alberta  
2009 Dairy Cost Study - Business Analysis  
30 Participants  
Table 3 Labour and Management**

**LABOUR**

	HOURS	VALUE	HOURLY RATE
OPERATOR LABOUR	2,917.76	58,355.17	20.00
HIRED LABOUR	2,297.77	44,390.15	19.32
FAMILY UNPAID LABOUR	1,768.07	34,368.33	19.44
<b>TOTAL</b>	<b>6,983.59</b>	<b>137,113.65</b>	<b>19.63</b>
RETURN TO FAMILY LABOUR	27.61		
MAN EQUIVALENTS	2.79		
LABOUR HOURS PER COW	48.61		
YEARS FARMING	19.05		

**MILK PRODUCTION**

	HL.	% OF TOTAL	VALUE	AVERAGE PRICE / HL
MILK SALES	13,028.70	96.69	991,373.68	76.09
OTHER MILK PRODUCED	446.52	3.31		
<b>TOTAL</b>	<b>13,475.22</b>	<b>100.00</b>		

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

BUTTERFAT TEST	3.81 KG / HL	11.65
PROTEIN	3.30 KG / HL	3.63
L.O.S.	5.68 KG / HL	3.50
MILK PRODUCTION PER COW	9,380.05 LITRES / YEAR	

**QUOTA INFORMATION**

TPQ HOLDINGS	131.51 KG / DAY
TPQ PRICE	31,907.37 \$ / KG / DAY
CREDIT PRICE	9.06 \$ / KG

**MANAGEMENT FACTORS**

COST PER HL	65.48
MILK/FEED (KG) RATIO	2.19 LITRES
MILK/LABOUR (HR) RATIO	192.96 LITRES
MILK/CAPITAL (\$) RATIO	.77 LITRES

**Southern Alberta  
2009 Dairy Cost Study - Business Analysis  
30 Participants  
Table 4 Feed Report**

	--- PURCHASED ---		--- HOMEGROWN---	
<u>CONCENTRATES</u>	QUANTITY (TONNES)	PRICE	QUANTITY (TONNES)	PRICE
OATS	.08	180.00	1.03	149.61
BARLEY	47.18	156.41	116.96	152.03
WHEAT	1.40	40.00	.00	.00
MIXED GRAIN	.00	.00	.00	.00
BREW GRAIN (DRY EQ. )	3.97	228.29		
BEET PULP	1.14	270.00		
OTHER PURCHASED	69.80	218.07		
DAIRY RATION	212.79	419.94		
CALF FEED	36.12	370.30		
MILK REPLACER	.43	2,742.61		
SUPPLEMENT	119.10	520.95		
MOLASSES	.00	.00		
SALT	.40	524.65		
MINERALS & VITAMINS	4.46	1,027.79		
SUBTOTAL -----	496.88	194,644.21	117.99	17,935.94
<u>ROUGHAGE</u>				
ALFALFA HAY	168.76	136.44	161.84	144.83
ALFALFA PELLETS	.00	.00		
STRAW FED	4.36	76.44	8.01	36.18
GREENFEED	.00	.00	1.11	123.42
SILAGE/HAYLAGE (DRY EQ.)	162.97	112.76	572.83	131.21
SUBTOTAL -----	336.09	41,735.76	743.80	99,027.90
GRINDING & PROCESSING		428.60		
GRAND TOTAL FEED COSTS -----		236,808.57		116,963.84
BEDDING	113.63	58.12	106.33	35.16
AV. PRICE:	CONCENTRATE	345.73 \$/TONNE		
	ROUGHAGE	130.35 \$/TONNE		
FED PER COW:	CONCENTRATE	4.28 TONNES		
	ROUGHAGE	7.52 TONNES		
% HOME GROWN:	CONCENTRATE	19.19 %		
	ROUGHAGE	68.88 %		

## **APPENDIX D**

**2009 Dairy Cost Study  
Charts Showing Individual Results  
(51 participants)**



# Dairy Cost Study 2009

## Individual Results (51 Participants)

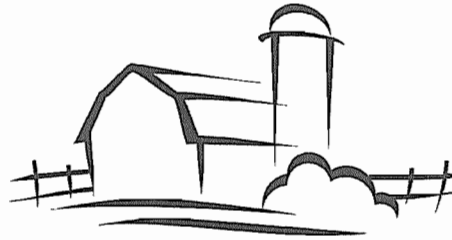
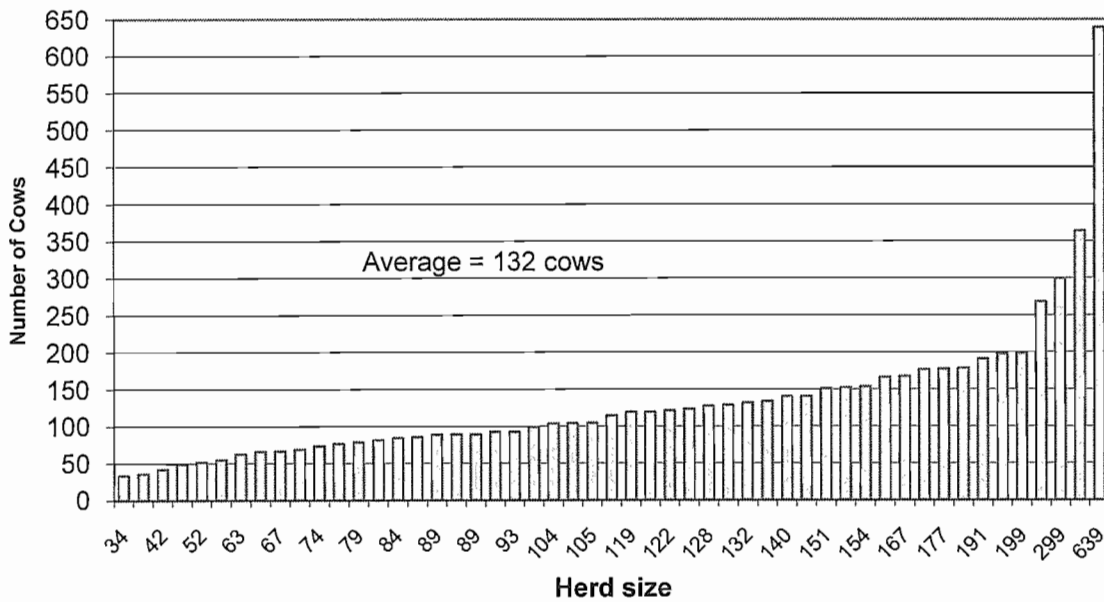
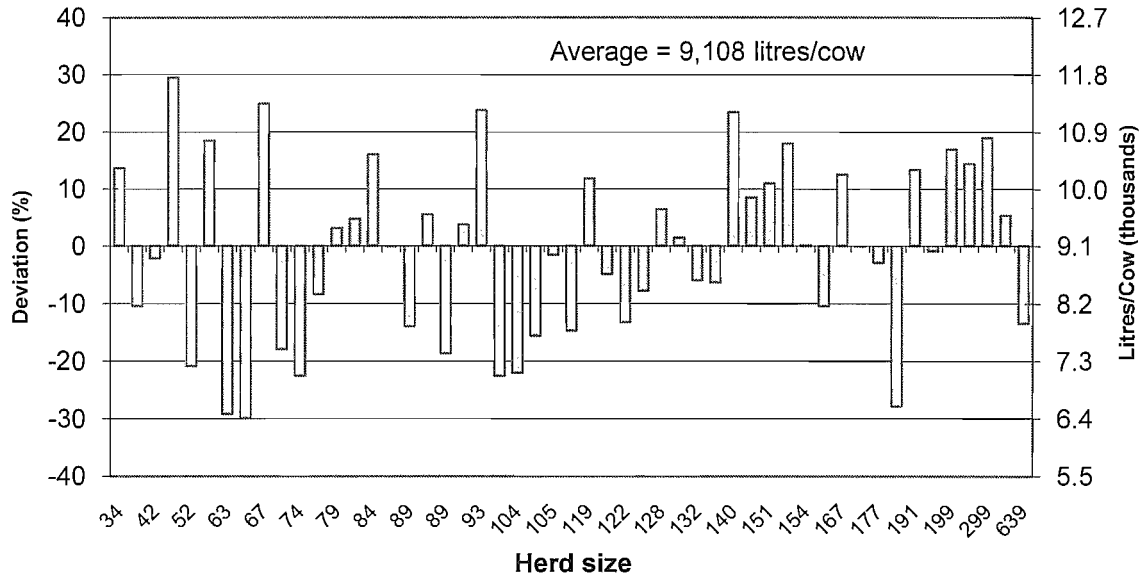


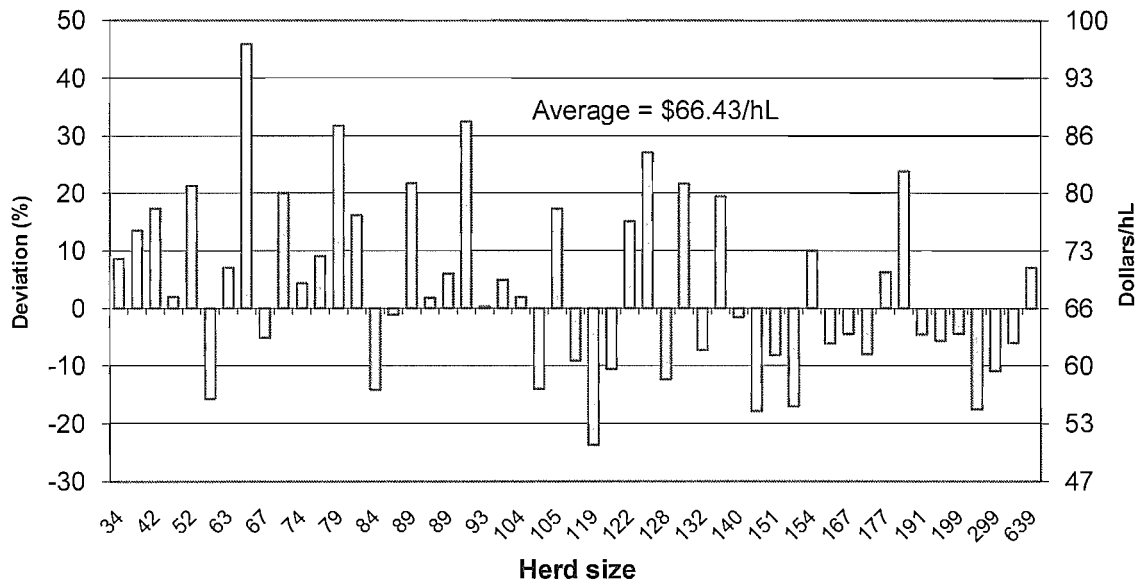
Figure 1 - Herd Size



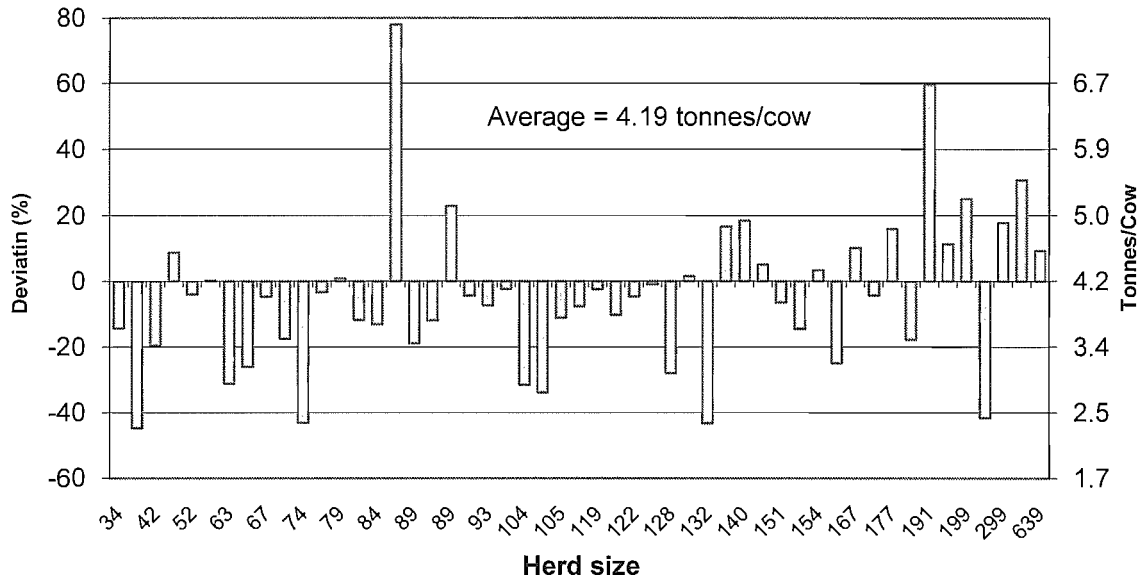
**Figure 2 - Milk Production  
(Litres/Cow)**



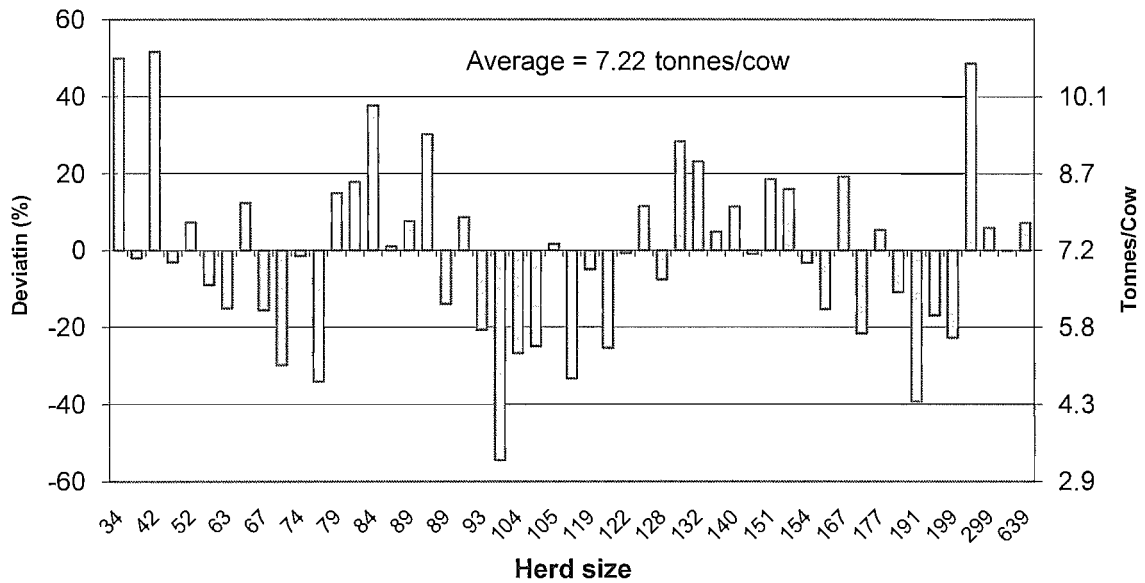
**Figure 3 - Cost of Production  
(Dollars/hL)**



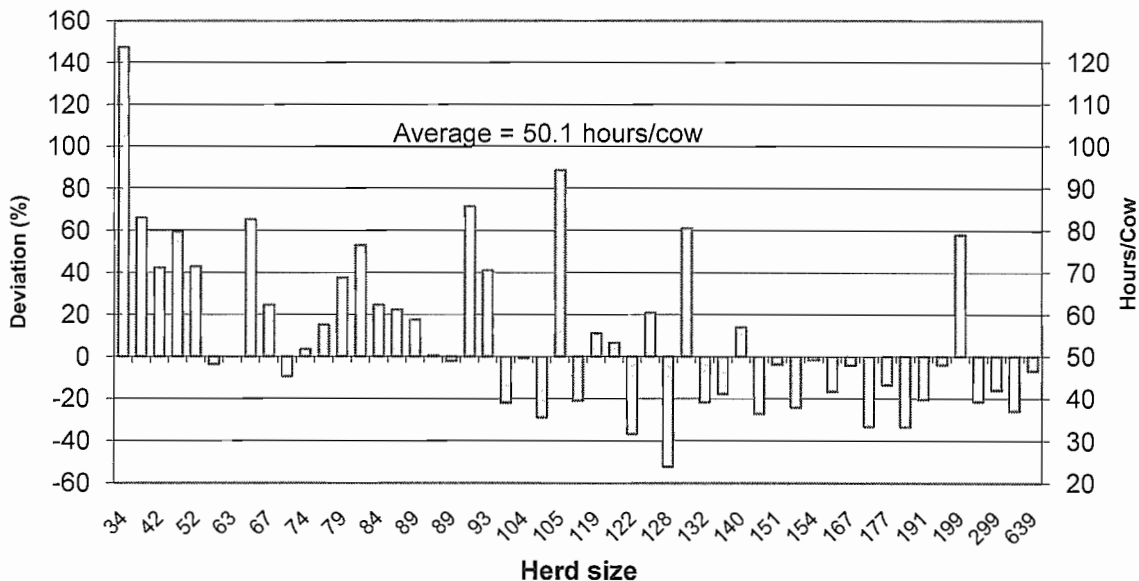
**Figure 4 - Concentrate Use  
(Tonnes/Cow)**



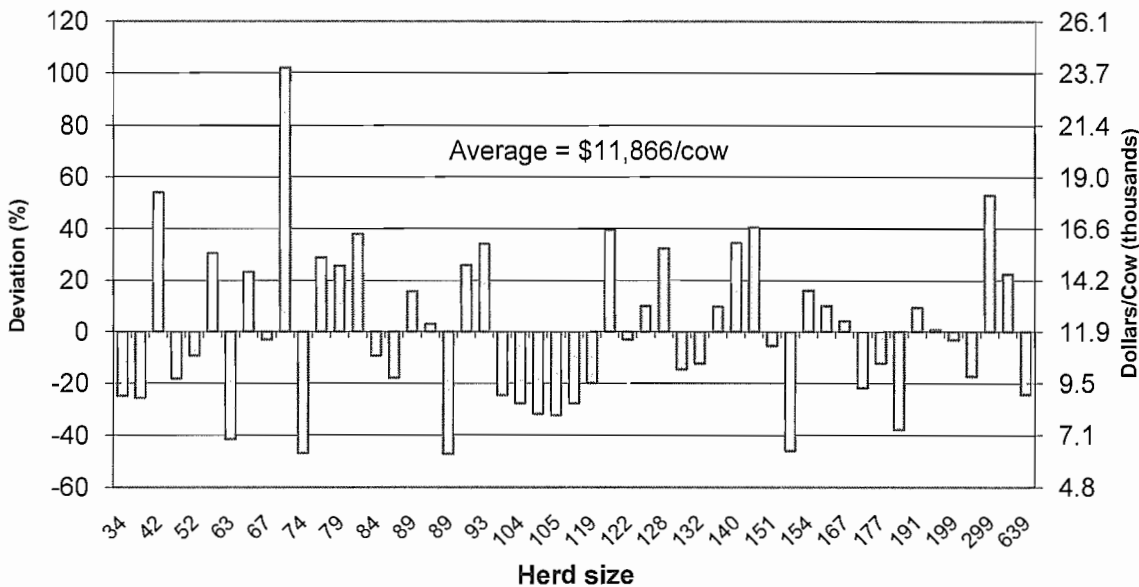
**Figure 5 - Roughage Use  
(Tonnes/Cow)**



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

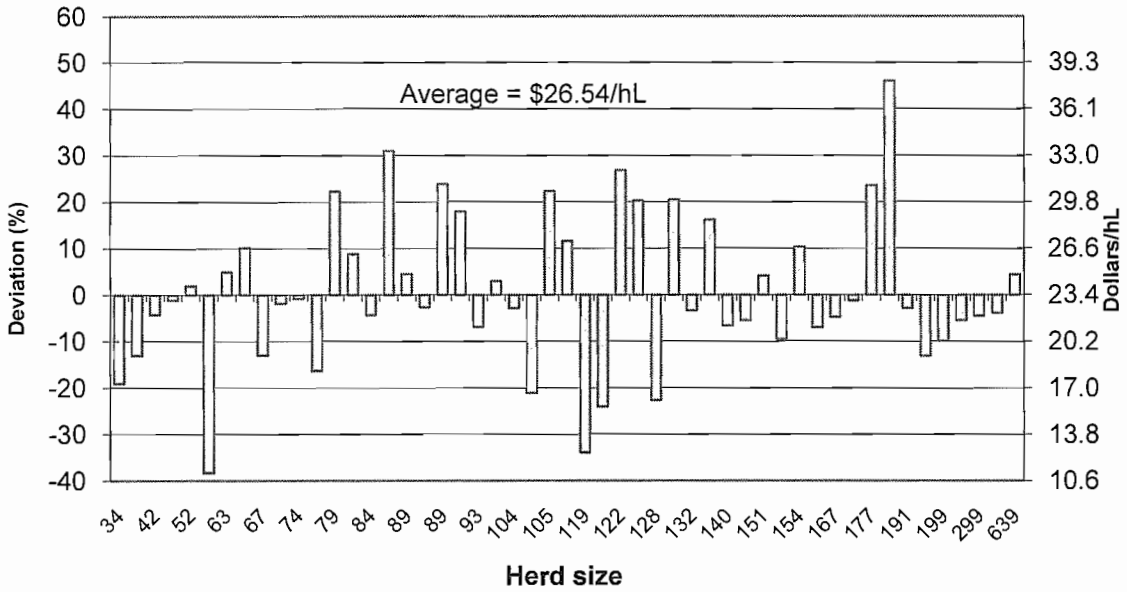


**Figure 7 - Investment  
(Dollars/Cow)**

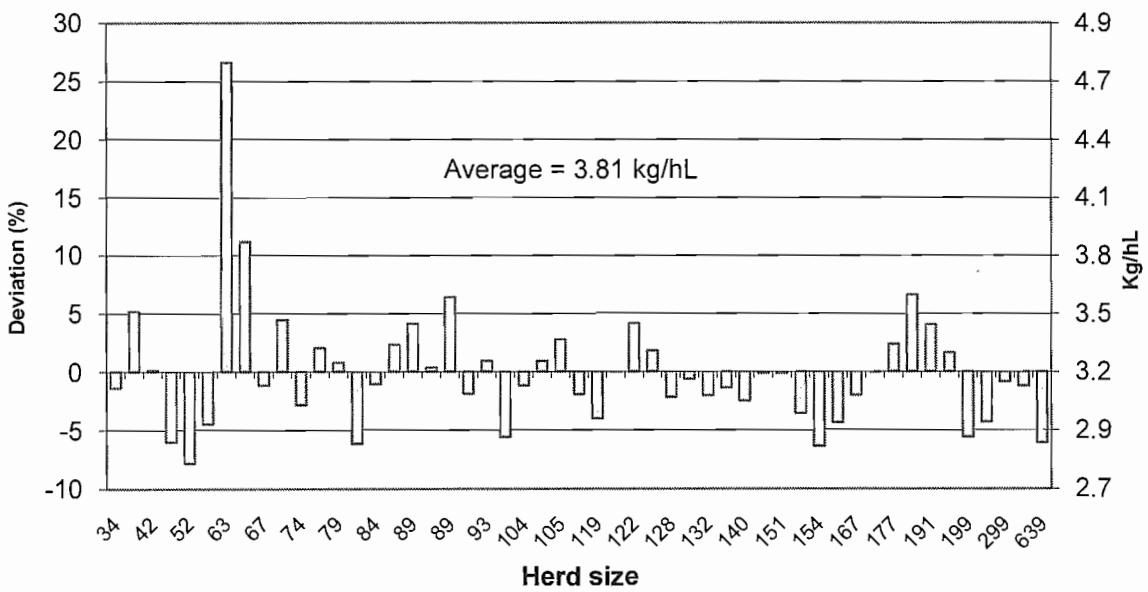




**Figure 8 - Total Feed Cost  
(Dollars/hL)**



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





## **APPENDIX E**

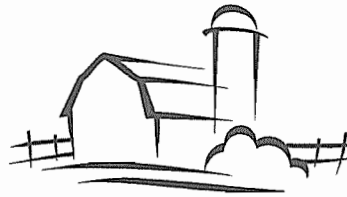
### **2009 Dairy Cost Study Data Collection Forms**



# DAIRY COST STUDY, 2009

## Investments and Liabilities

Confidential



### General Information

Name:	TPQ Allocated kgs: (Jan. 1, 2009)	
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, 2009	Interest Rate	% to Dairy	% to Other Farm
1	Land:				
1					
2	Building:				
2					
3	Livestock:				
3					
4	Machinery:				
4					
5	Other:				

### Supplies Inventory

		Value: Jan. 1, 2009	% to Dairy	% to Other Farm
1	Gas, Oil & Grease			
2	Vet., Semen, Etc			
3	Bedding			
4	Dairy Livestock Supplies			
5	Rations & Supplements			
6	Other Supplies			

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

# DAIRY COST STUDY, 2009

Machinery and Buildings on Jan.1, 2009

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

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					

## Dairy Equipment:

3					
3					
3					
3					
3					
3					
3					
3					
3					
3					

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



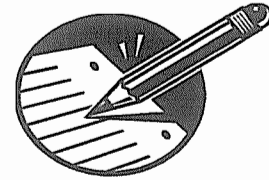
Other Equipment Used for Dairy:	Purchased Price	Year Purchased	% to Dairy	% to Other Farm
4				
4				
4				
4				
4				
4				
4				
4				
4				
4				
4				
4				
4				
4				
4				
4				
4				
4				

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, 2009

## Monthly Reporting Sheet

Confidential



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

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

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

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

\*less than 6 months

### Capital Purchases

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: (# of kgs)			
14		Sold: (# of kgs)			
15		Leased: (# of kgs)			

### 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)	Code		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)

### LABOUR for Dairy Activities \*

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



\* do not include hours doing fieldwork

### EXPENSES

EXPENSES		Total Farm (\$)	% to Dairy	% Other Farm
1	Veterinary and Medicine			
1	Breeding			
2	Livestock & Barn Supplies			
3	Building & Fence Repair			
4	Machinery & Equipment Repair			
6	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)			
12				



## **APPENDIX F**

### **Fluid Milk Pricing in Alberta**



## Fluid Milk Pricing in Alberta

The fluid milk price received by dairy producers in Alberta was regulated by the Alberta Utilities Commission (AUC) until August, 2008. It was drawn from a fluid milk pricing formula maintained by the Alberta Department of Agriculture and Rural Development.

An order in Council issued on August 27, 2008, amended the Alberta Milk Plan regulation by repealing the Alberta Utilities Commission's authority to set the farm-gate price of class 1a milk. The authority to set fluid milk prices was transferred to Alberta Milk as of September 1, 2008. Alberta Milk applies the fluid milk price established by the Canadian Dairy Commission milk price indexing formula. The formula includes three indices: Cost of Production (from the National Cost of Production Study), Consumer Price Index and Personal Disposable Income (from Statistics Canada) with a weighting of 40%, 30%, and 30%, respectively. This indexing formula is the same as the one used in eastern Canada (P5 provinces), however, the base fluid milk price in western Canada is lower. In Alberta, the formula is applied to the fluid milk price on February 1 and August 1 of each year.