

Do we Know the Cost of Milk Production in Saskatchewan?

David Christensen

- **Comprehensive cost of production studies are conducted by;**
 - Canadian Dairy Commission**
 - Dairy Farmers of Ontario**
 - Alberta Agriculture**
 - Quebec**
- **Cost of production estimates methods vary.**
- **How much do costs vary across farms?**

Income and Cost of Production Studies

- **Fluid milk price, the Western Pool has adopted the P5 formula based on Cost of Living, cash costs index, personal disposable income.**
- **Industrial milk price, based on COP study by CDC, accounting firms contracted in each province. About 200 farms, 10 in Sask.**
- **Some provinces do an additional within province COP.**
- **Alberta and Ontario have comprehensive studies, methods differ from each other and CDC**

The Cost of Establishing a Sask Dairy Farm in 2017

Item, 200 cows milking	Unit cost, \$	Per Cow \$	200 cows \$
Barn area, includes insulation			
Free stall area, 100 sq ft/cow	\$ 30 per sq ft	3,300	660,000
Other space (1)	\$ 36 per sq ft	900	180,000
Stalls, matts		230	46,000
Milking center const	\$ 45/sq ft	1,740	261,000
Milking parlor	\$585,000	2,925	585,000
Milk bulk tank, etc	\$90,000	600	90,000
In barn manure equip	\$50,000	250	50,000
Electrical and plumbing	\$100,000	500	100,000
Ventillation	\$110,000	500	110,000
Manure storage (2)	\$250,000	1,250	250,000
Feed storage	\$210,000	1,400	210,000
Facilities Total		13,595	2,542,000
Quota, \$//kg/day	\$ 85/kg	30,000	6,000,000
Milking cows	2,300	3,800	345,000
Gross revenue \$/365 d, 33L	82 \$/100 L	9,877	1,481,535
1, Box stalls, bedded pack, 4500 sq ft			
2, Clay lined lagoon			
Other costs ?			
Site work	\$35,000		
Stand -by generator	\$10-25,000		
Well, water supply	\$10-30,000		

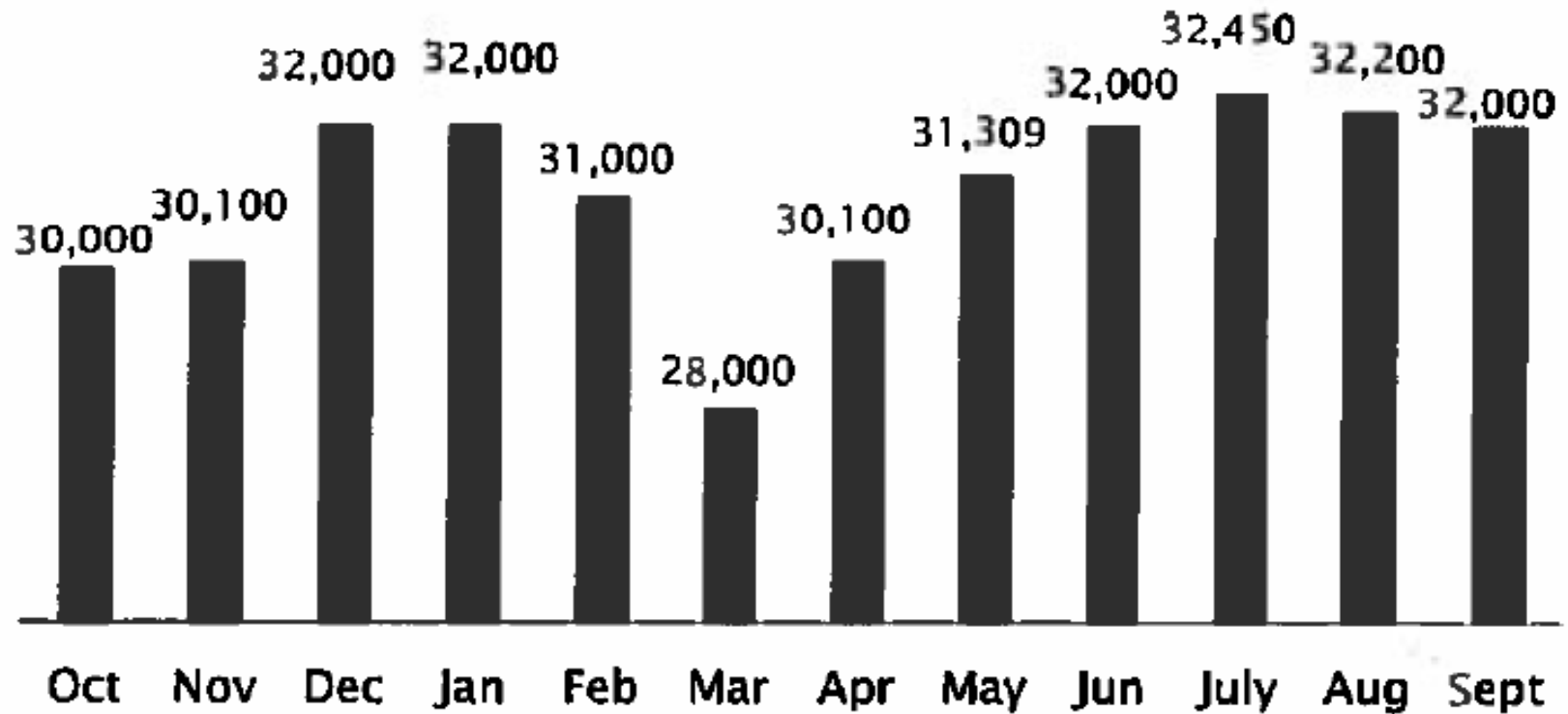
Quota Value 20 Years Ago, 1997

In the mid 1970s quota was introduced to regulate supply. Initially quota was obtained by purchasing cows. Later quota was traded within provinces as daily litres of milk at 3.6% fat. Then kg fat marketed per day on an ongoing basis

Province	\$/kg fat/day
BC	6,440
AB	6,675
SK	4,335 (3,285 in 1994)
MB	4,745
ON	7,360
QE	7,360
NS	7,360
NB	6,660
PEI	4,822

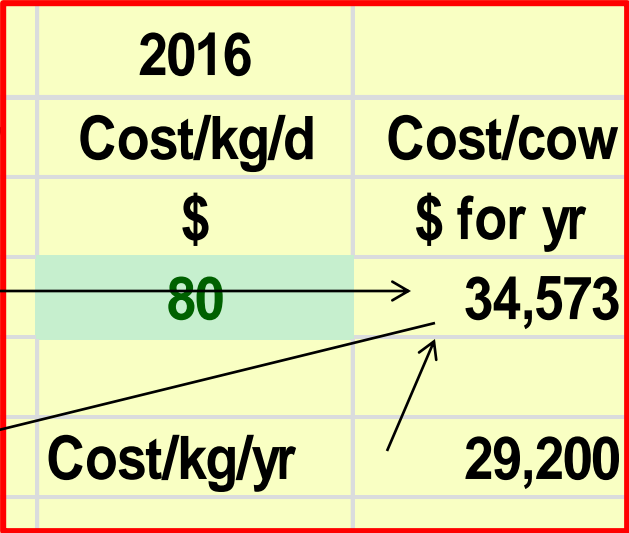
Saskatchewan Quota Exchange Results (\$ / daily kg b.f.)

Sept 2017



Quota Cost per Cow Housed

Milk yield	Milk Fat	Fat/d	Fat/yr	2016 Cost/kg/d	Cost/cow \$ for yr
L/day	%	kg	kg	\$	\$ for yr
32	3.7	1.184	432	80	34,573
Amortization of a Loan				Cost/kg/yr	29,200
Principal, \$	34,573				
n per yr	12				
yrs	15				
interest/yr	0.06				
r per n	0.005				
Payments, \$/cow/m	292				
Annual, \$	3,501				
Total payback, \$	52,514				
Cost, \$/ L milk	0.300				



Quota Cost Based on Price per kg and Loan Period

Interest rate is a long term average of 5%

Cost, kg fat/day, \$		80	100	120
Cost, one kg fat for 365 days, \$		29,200	36,500	43,800
Cost/cow/yr, 12yr payback, \$		1,944	2,431	2,917
Cost/L new milk, \$		0.333	0.416	0.499
Cost/cow/yr, 6 yr payback, \$		3,386	4,232	5,078
Cost/L new milk, \$		0.580	0.725	0.870
If 3% interest over 12 yr				
Cost/cow/yr, 12yr payback, \$		1,740	2,175	2,610
Cost/L new milk, \$		0.298	0.372	0.447

THE DAIRY COST STUDY: Annual, July of following
year

ECONOMICS OF MILK PRODUCTION

IN ALBERTA

On line as Alberta milk cost
of production

The following tables are based on 49
herds surveyed in 2016, p 37 for detail

the Dairy Cost Study is released as a public document, no permissions are required

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Example of How Ontario and Alberta COP Studies Differ

- **Alberta estimate of average hours of labour per cow, 53 to 62 hours for milking, feeding and cleaning.**
- **Feed cost based on market. Individual farms \$28 to \$48/hl .**
- **Ontario estimate per cow, 60 to 143 hours, but this includes time for feed production.**

Alberta COP, 2016

Table 8 - Dairy Enterprise by Total Cost Class

Total Cost ranged between \$59.56 and \$139.39 per hL sold.

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

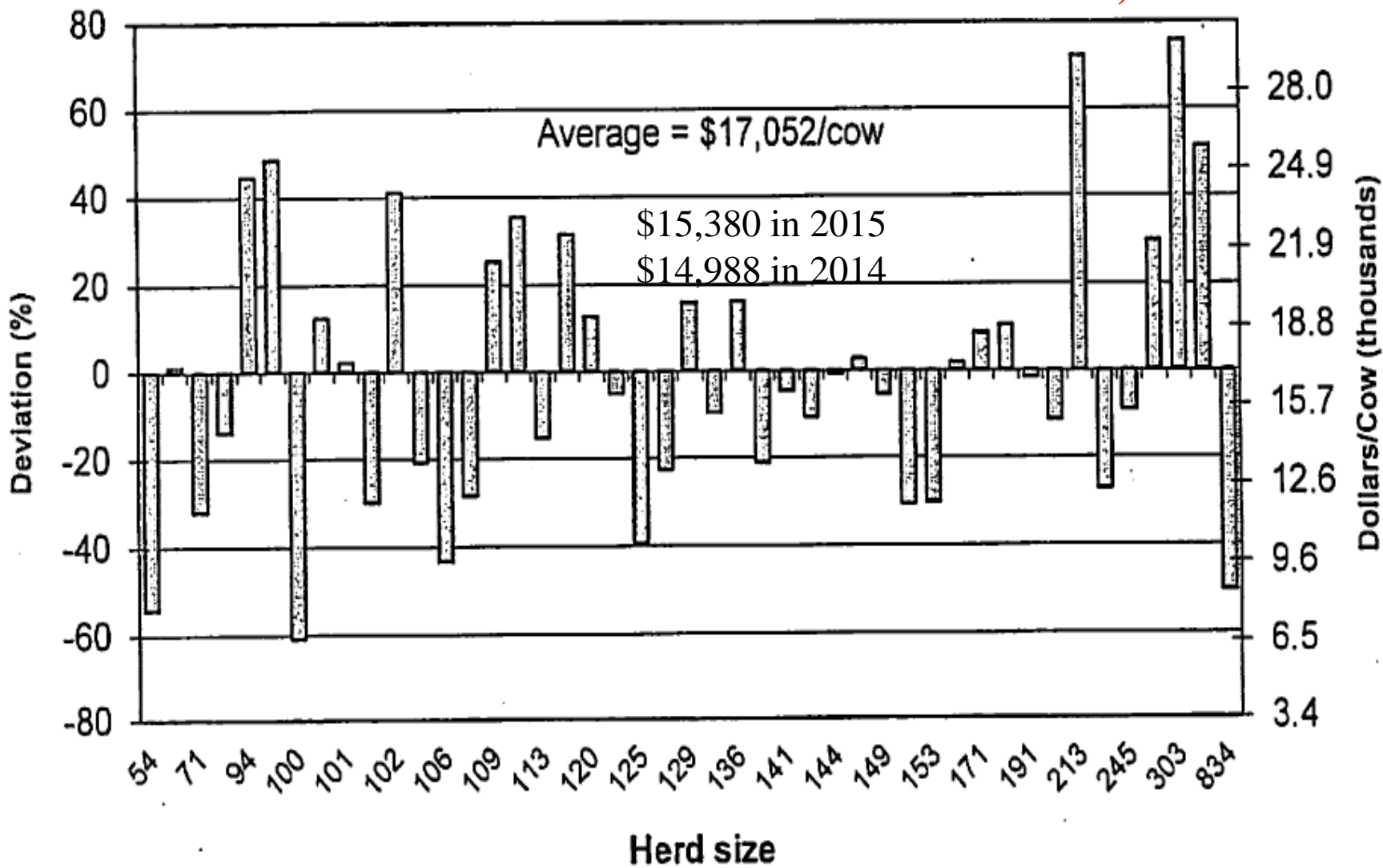
Top 1/3	59.56 - 72.49
Middle 1/3	72.98 - 80.36
Bottom 1/3	81.29 - 139.39

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

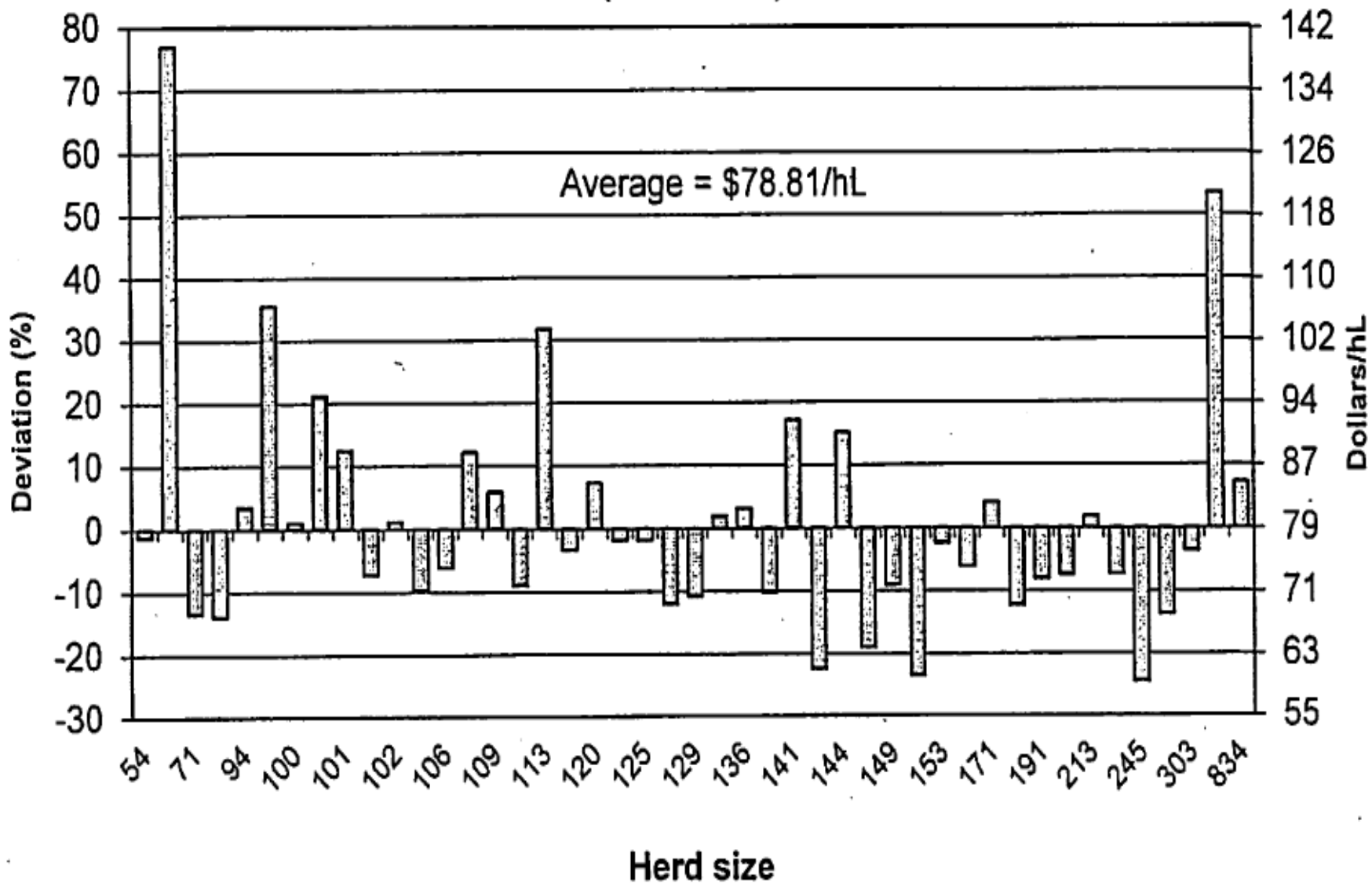
	Top 1/3 59.56-72.49	Middle 1/3 72.98-80.36	Bottom 1/3 81.29-139.39
Years in Dairy	26.50	27.03	25.63
Herd Size	148	148	186
Milk Production (litres/yr)	10,384.78	10,232.22	8,650.45
Home Grown Feed (%)	73.1	68.4	72.1
Butterfat Test (kg/hL)	4.06	4.04	4.13
Gross Income (\$/hL)	84.58	83.91	86.48
Feed Costs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

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

Alberta COP, 2016



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



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

Alberta COP 2016

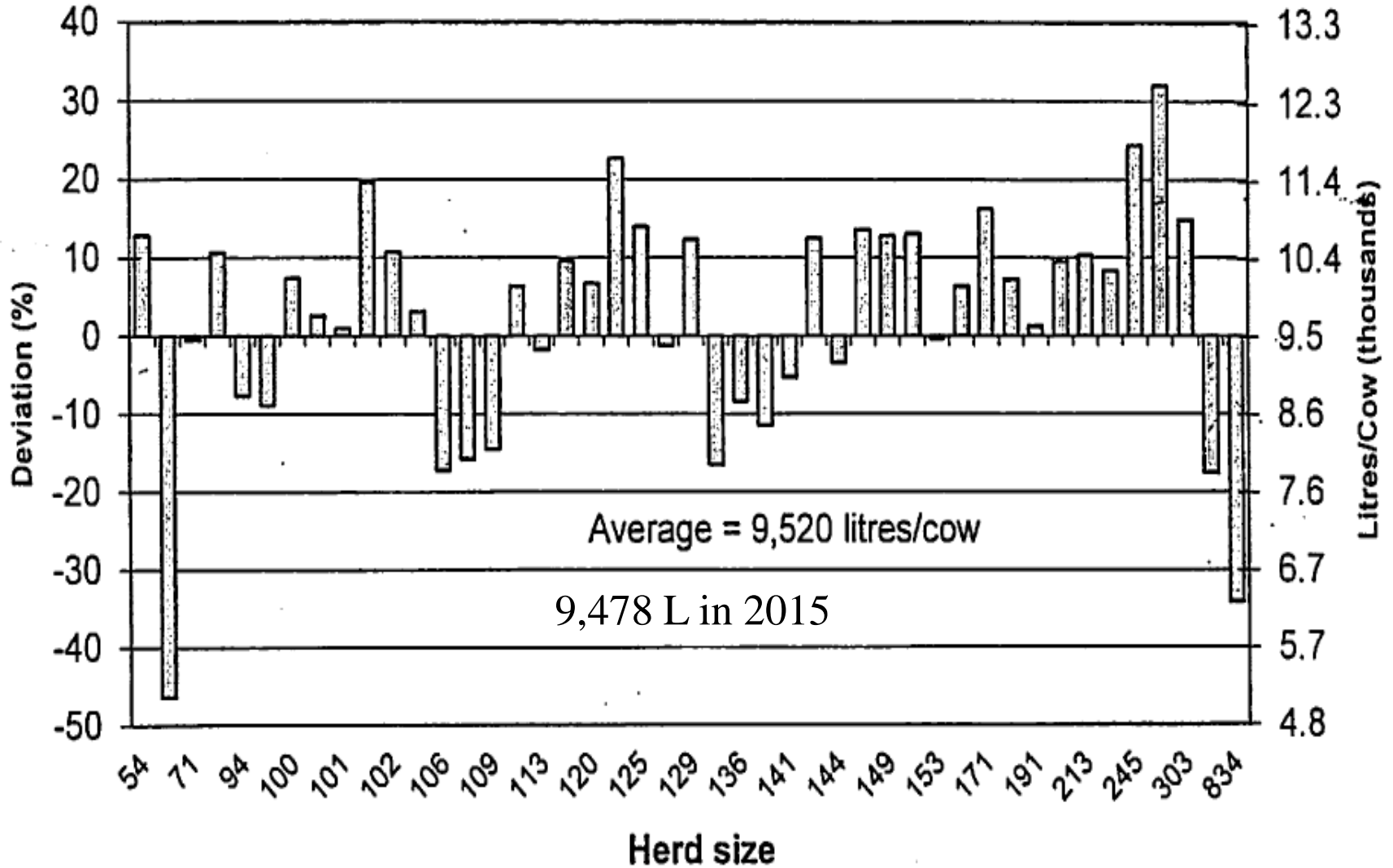
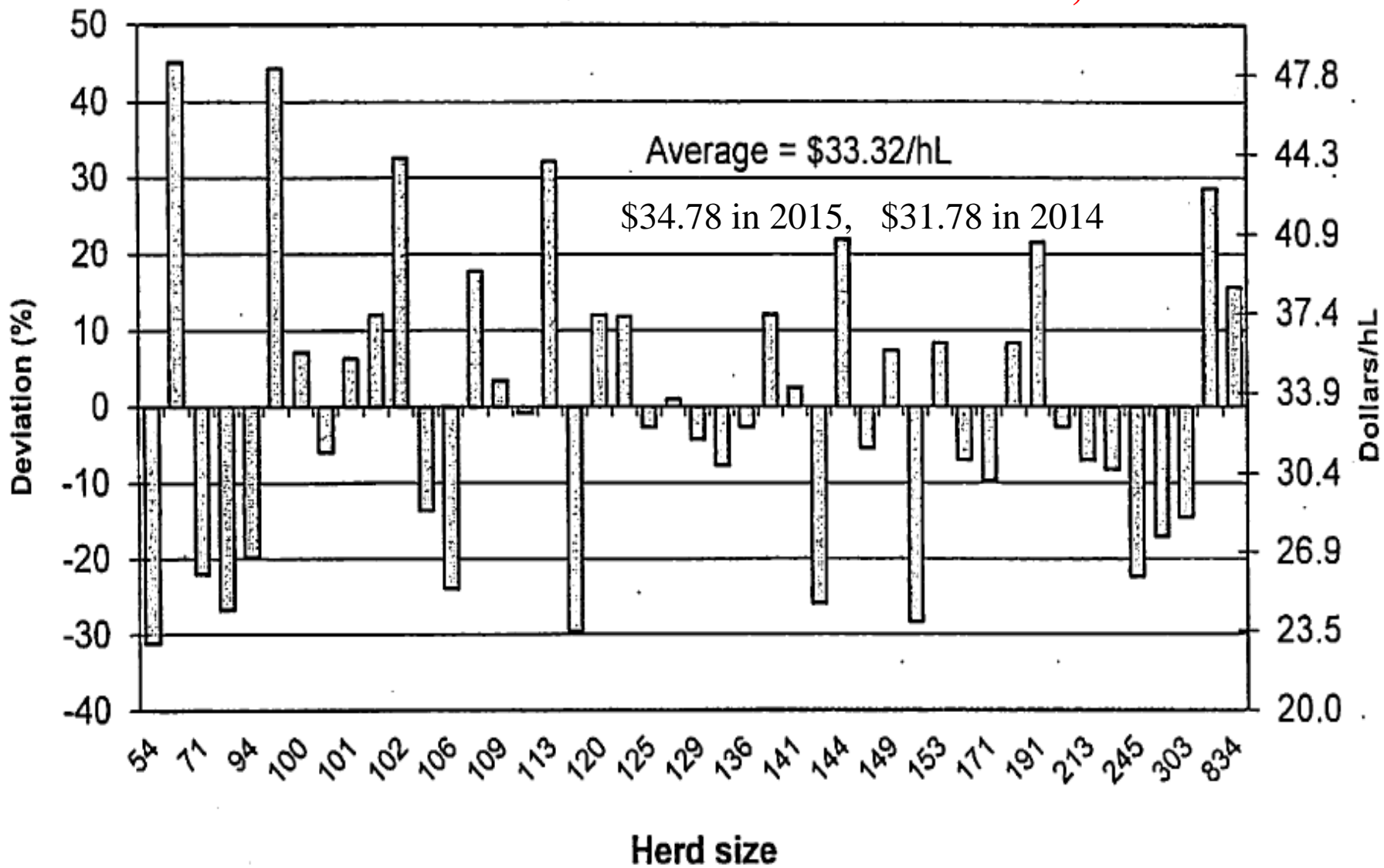


Figure 8 - Total Feed Cost
 (Dollars/hL) **Alberta COP, 2016**



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

Alberta COP, 2016

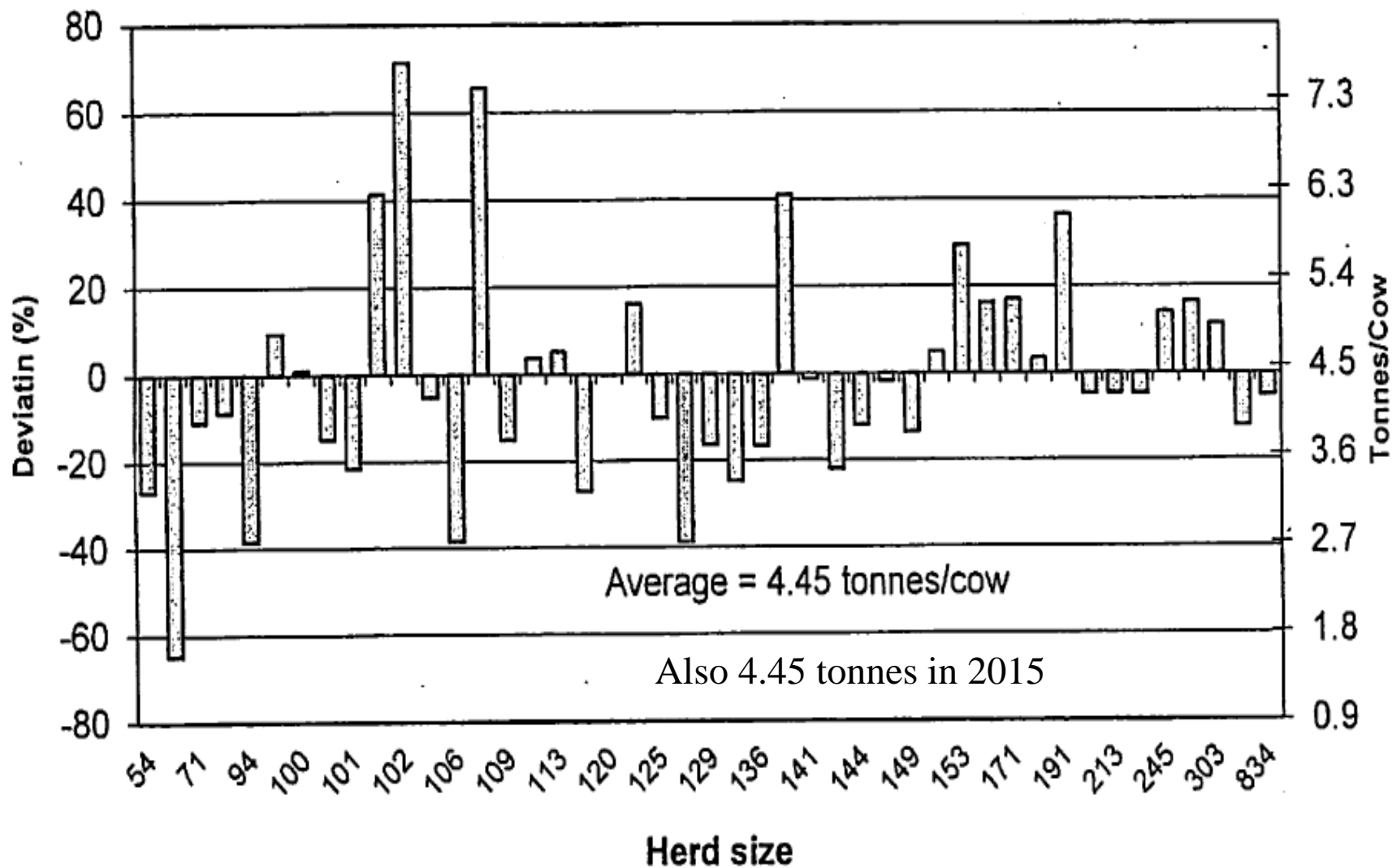


Figure 5 - Roughage Use
(Tonnes/Cow)

Alberta COP, 2016

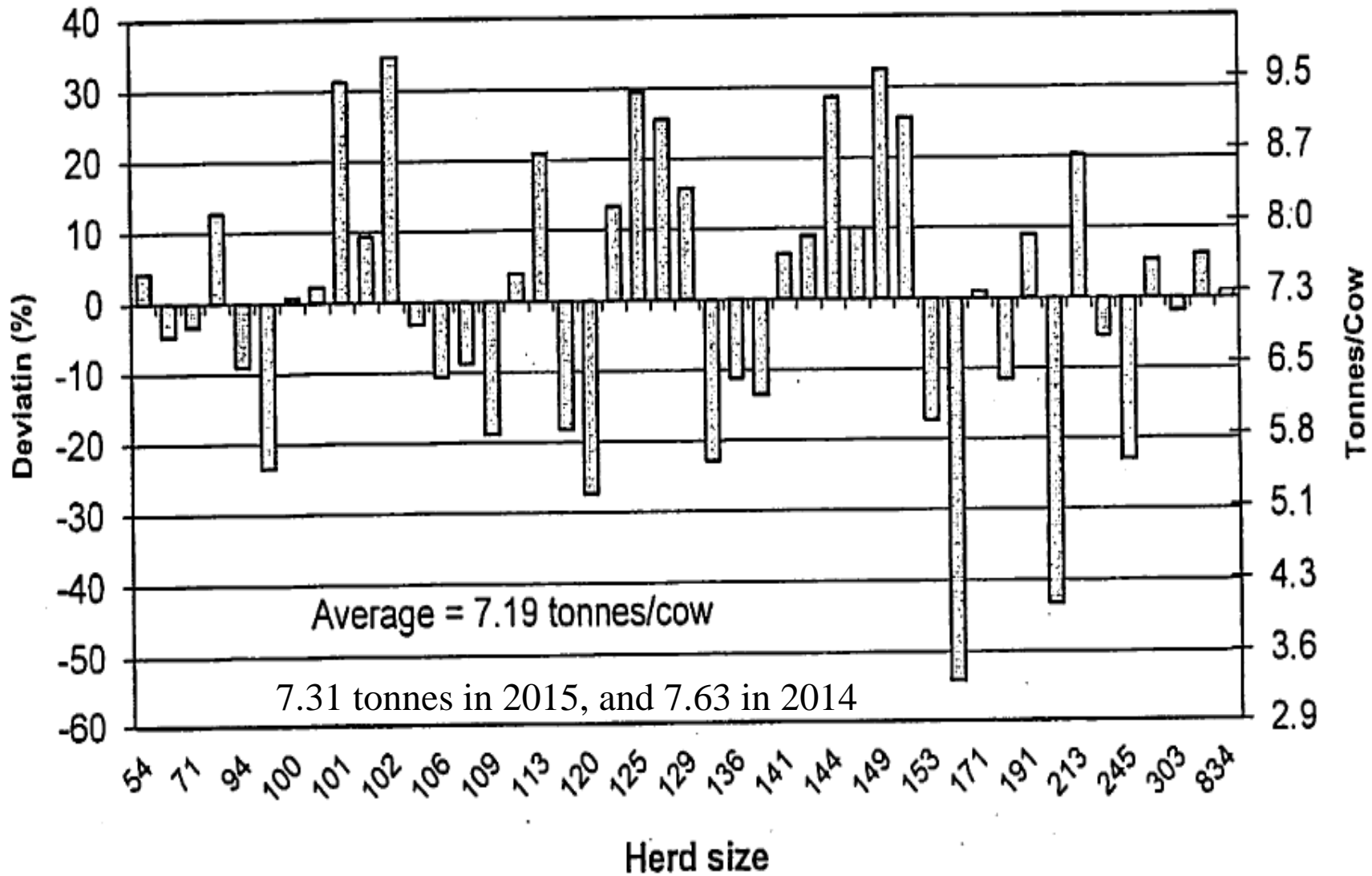
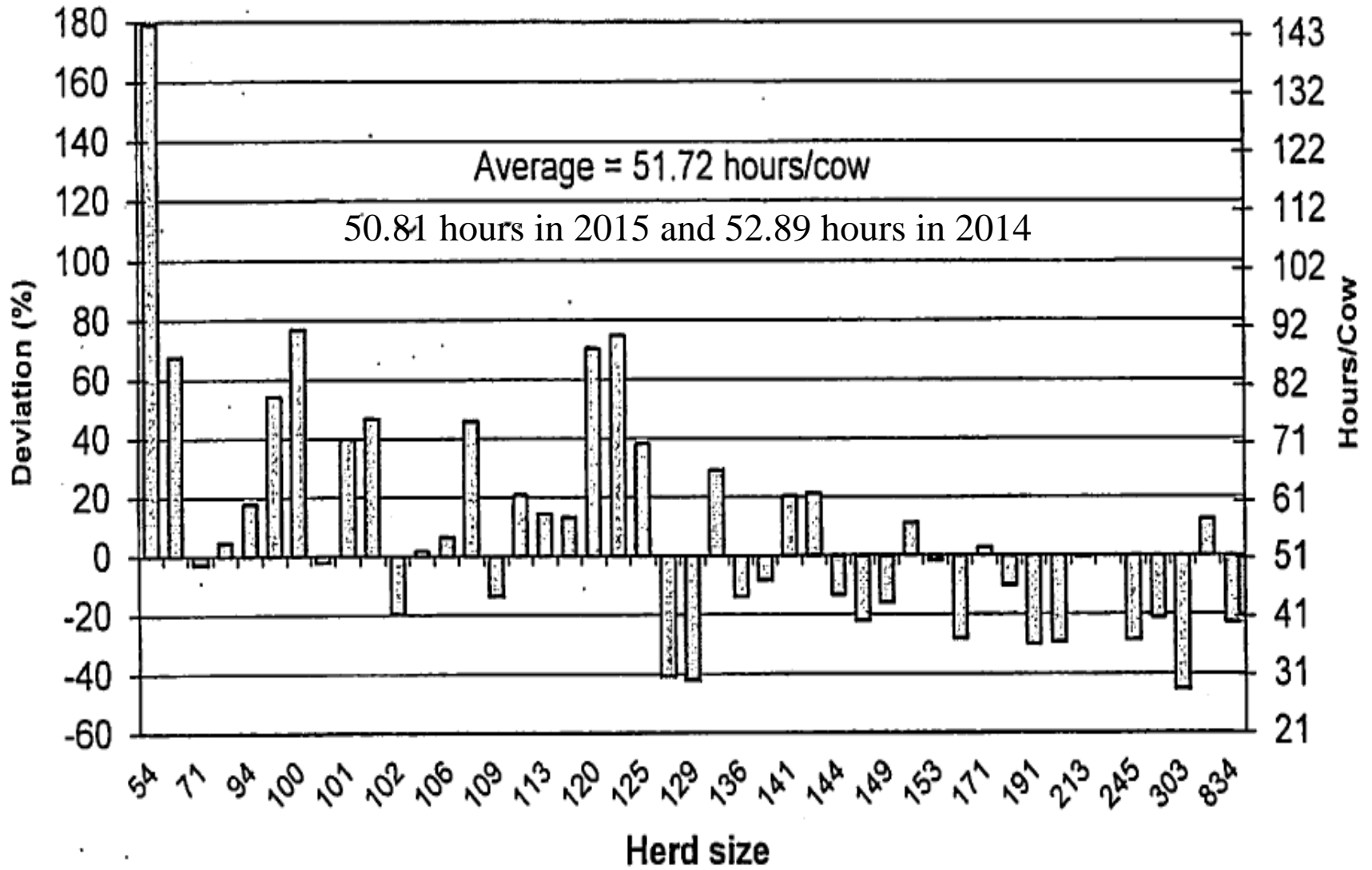


Figure 6 - Labour Use
(Hours/Cow)

Alberta COP, 2016



Alberta COP 2016

Item	Per Cow, \$	Per hl sold, \$
Milk sales	7,349	79.13
Other sales	586	6.32
Gross income	7,935	<u>85.45</u>
<u>Feed costs</u>	3,094	33.32
<u>Operating (variable) costs</u>	1,920	20.68
Overhead, taxes, capital	1,244	13.39
Labour		
Hired	315	3.40
Family	744	8.01
<u>Total labour</u>	1,059	→ 11.41
Total production costs	7,318	78.81
Return to equity	617	6.84
Net for 170 cows	104,890	
Investment per cow	16,000	
Return on investment, %	3.85	

Ontario Dairy Farm Cost of Production

2016 , DFO and CDC

**Farm
Average**

Number of Farms

65

Number of cows

82.7

Milk sold, litres per cow

9,300

Labour per cow, hours (1)

99

Workers per farm

2.4

Milk and cattle revenue, \$/hl

82.94

Direct expenses, \$/hl (2)

26.66

Dairy crop expenses, \$/hl (3)

14.69

Indirect and overhead, \$/hl

22.04

Total cost \$/hl

63.39

Net return, \$/hl

19.55

1, includes feed production

2, includes purchased feed

3, On farm feed production

The Ontario hours per cow problem

82.7 cows x 99 hrs per cow = 8147 hours

8187 hours / 2.4 workers = 3,411 hrs per worker

or, 341 ten hour days per worker ???

Income per worker 3,411 hr at \$15/hr = \$51,165

But recorded salaries and wages are \$25,684

Canadian Dairy Commission, 2016

Based on 223 herds, 47 in west

Cash costs, \$/hl (1)	42.90
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Capital costs, \$/hl	14.45
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Labour and management	19.34
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Total cost, \$/hl (2)	76.68
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1, includes feed, produced and purchased

2, Total includes return to equity of

(\$3.90/hl) and management (\$5.25/hl)

Management charged at \$44.69/hr

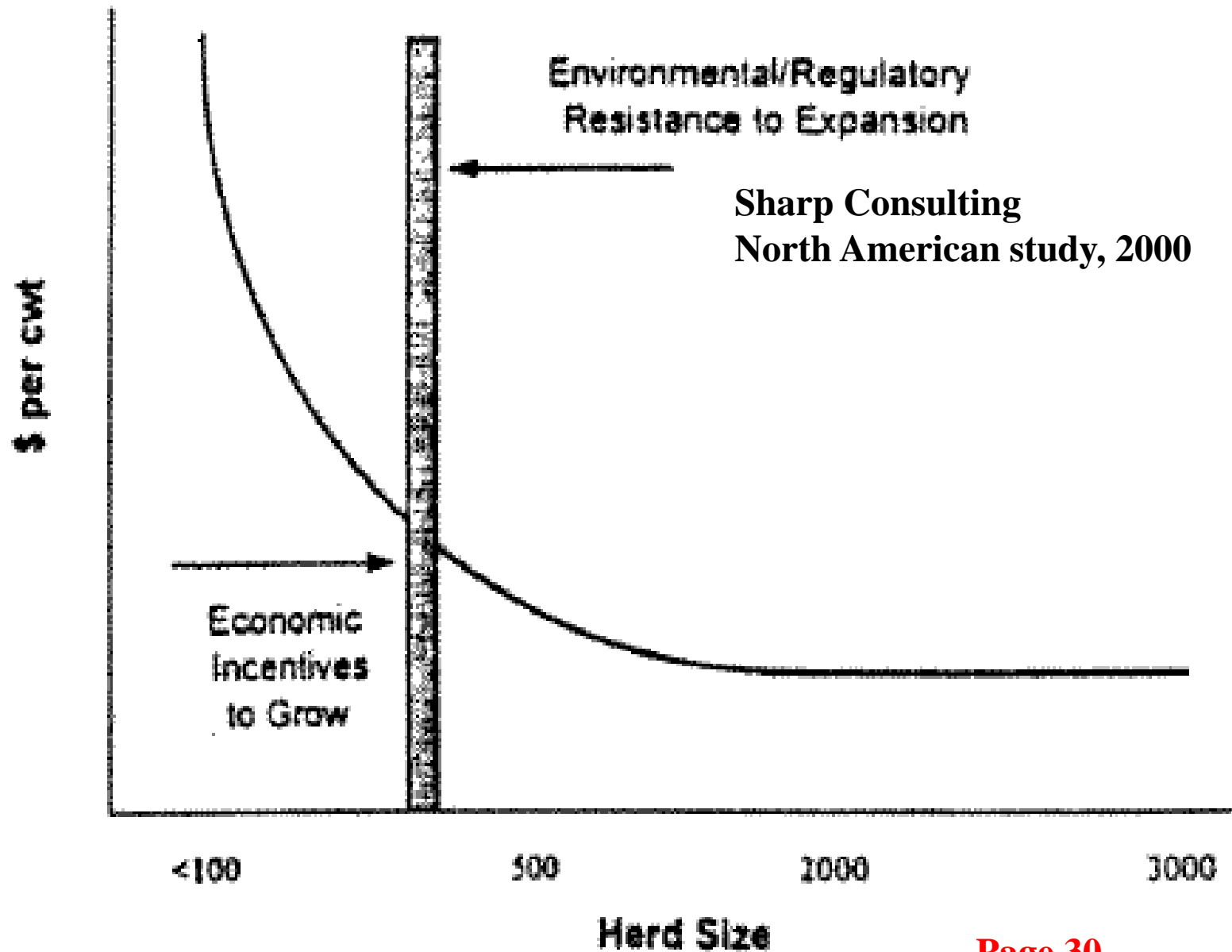
Cost adjusted for equity and mgmt \$67.53

Summary of USDA and Alberta COP of milk per ha and per cow

P 37A

	2010 USDA		2012 to 2016 USDA		2012-16 Alberta	
	C \$/ha	C\$/cow	C \$/ha	C\$/cow	C \$/ha	C\$/cow
Feed cost	27.99	2,855	42.67	4,353	32.81	2,920
Operating costs	8.13	829	8.93	911	19.56	1,741
Labour	10.06	1,026	10.68	1,090	12.42	1,103
Overhead (capital)	11.19	1,141	12.35	1,260	12.62	1,122
Total costs	57.36	5,851	74.65	7,614	77.40	6,887
Income minus cost	-7.58	-773	-14.87	-1,517	9.42	836
Contribution margin	13.66	1,394	8.17	833	22.04	1,958
USDA survey results per cwt in \$US converted to kg and C\$ based on \$C 0.80 per US\$						
US milk yield per cow based on 10,200 kg.						
					Cow	ha milk
C\$/ha (cow)	49.78		59.78		86.82	80.50
US\$/cwt	18.07		21.70		31.51	29.22

Chart 9. Hypothetical Conflicting Economic/Regulatory Incentives



Sharp Consulting
North American study, 2000

What is the Dairy Forage System Model?

Financial management companies have somewhat similar cost of production models

Rotz, J Dy Sci. 82 2826, 1999

The Dairy Forage System Model (DAFOSYM) simulates the performance, environmental impact and economics of a dairy farm over multiple years of weather. The simulation includes the growth, harvest, handling and storage of alfalfa, grass, corn, small grain and soybean crops. Farm produced feeds are supplemented with purchased feeds to meet a given level of production for a dairy herd. Manure is returned back to the land where nutrients are lost, accumulated in the soil or used in crop production. Costs of feed production and manure handling are compared to milk, animal, and feed sales to determine a net return over those costs for the farm. Other farm costs are then included to estimate the net return or profitability of the whole farm. To provide an understanding of the model and its capabilities, a brief overview is presented. More detail can be found in the Reference Manual provided with the model or the references cited.

What will be the Income Impact be of the Comprehensive and Progressive Trans Pacific Partnership (CPTPP)?

- Some specific supply management impacts published by ipolitics January 23 2018.**
- Import access equal to 3.25% of the current dairy market.**
- Initially 14,000 tonnes, up to 16,502 tonnes of cheese. Similar to the CTEA agreement.**
- Raw milk, initially 50,000 tonnes increasing to 56,905 tonnes, for food processing.**
- No announcement on producer compensation.**
- What impact on the 220,000 dairy related jobs?**



SaskMilk has a New Entrant Program

- **SaskMilk will provide participants a quota grant of 15 to 20 kgs (on a 1:1 match basis) for production by the **new** production facility. No ownership or financial interest in an existing dairy.**
- **Grant quota may be produced by the production facility for as long as the Applicant remains a licensed producer.**
- **Grant quota is not saleable or transferable.**
- **If the production unit purchases or acquires quota within the first five years from the start of production that results in a production unit size greater than 80 kg, Grant quota will be returned to SaskMilk on a 1:1 basis as it goes over the 80 kg limit.**
- **Grant quota is assignable to financial institutions for the purpose of security, subject to approval by SaskMilk, with specific conditions to apply to the assignee's ownership and disposal of Grant Quota:**

Quota Value by Province Sept. 2017

