

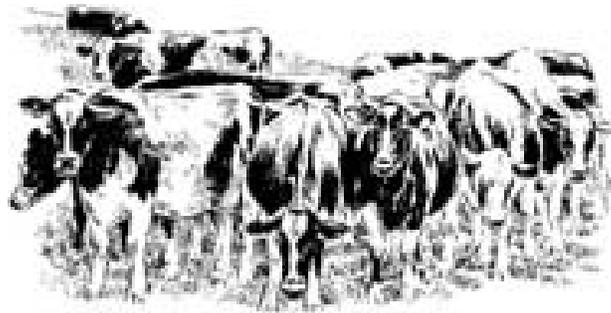
A Center for Dairy Profitability Report and UW-Extension publication

**WISCONSIN AgFA DAIRY FARMS
PROFITABILITY REPORT
FOR 50-100 COW SIZE
2005**

by

Jon Zander¹

December 2007



¹ Jon Zander is an UW-Extension Agriculture Agent in Trempealeau County, Wisconsin.

Acknowledgements

The author wishes to thank the Lakeshore Farm Management Association, Fox Valley Management Association, Wisconsin County Agents and Wisconsin Technical College System Instructors, and the Center for Dairy Profitability for collecting these data. Individual farm managers used a number of different manual and computerized record keeping systems to enter their initial financial information, including the Agricultural Accounting and Information Management System (AAIMS©) and Quickbooks©. Personnel affiliated with the organizations (above) helped individual farm managers reconcile their financial data.

The Agriculture Financial Advisor (AgFA©) data set was used for this study. AgFA© represents a sample of Wisconsin dairy farms from which financial and production data are collected annually. It is a active/real-time database program. The database is growing in the number of farms and participants each year.

Special Thanks to Nate Splett, Associate Dean, UW-River Falls and Gary Frank, University of Wisconsin/Madison – Emeritus for their guidance, constructive comments and editorial review.

This summary report is prepared by the Center for Dairy Profitability – Madison, Platteville, River Falls and UW-Extension, December 2007.

Preface

I am pleased that this profitability report is available to us in Wisconsin – and beyond. With this report, Jon Zander is continuing the core work and mission of the Center for Dairy Profitability (CDP). A number of years ago and for many years the CDP and UW-Extension agents partnered with many dairy producers in Wisconsin to provide profitability analyses of Wisconsin dairy farms – to help dairy producers improve profitability. Cornell University was a generous supporter of our efforts in sharing their Dairy Farm Business Summary (DFBS) program with us for this purpose. In time, under the vision and leadership of Dr. Gary Frank, Director for the CDP, we were able to develop and implement our own *Wisconsin Agriculture Financial Advisor (AgFA)* financial management program. *AgFA* enables us to collect, analyze, and report financial performance information in real time. With this report, Jon is giving us insight to dairy farms ranging in size from 50 to 100 cows. While our dairy farms are decreasing in number and increasing in size, the majority of our 15,000 dairy farms are in this size range. As we make use of this report, we look forward to future reports analyzing our Wisconsin dairy farms.



Nate Splett
Associate Dean
College of Agriculture, Food and Environmental Sciences
UW-River Falls

Profitability Analysis

This report analyzes the “profitability” of a select number of dairy farm businesses. It enables the owner/operator/manager to compare her/his dairy farm business to other dairy farm businesses on the basis of profitability. Farms that were more profitable tended to have higher financial efficiency, higher milk production per cow and higher (physical) labor efficiency per cow.

Data Source and Methodology

The Agriculture Financial Advisor (AgFA©) data set was used for this study. AgFA represents a sample of Wisconsin dairy farms from which financial and production data are collected annually. This study uses 2005 data composed of a sample of approximately 600 dairy farms. Of these 600 farms, 232 reported the number of operators on their farm. This profitability analysis report emphasizes the 50-100 cow size of these 232 farms.

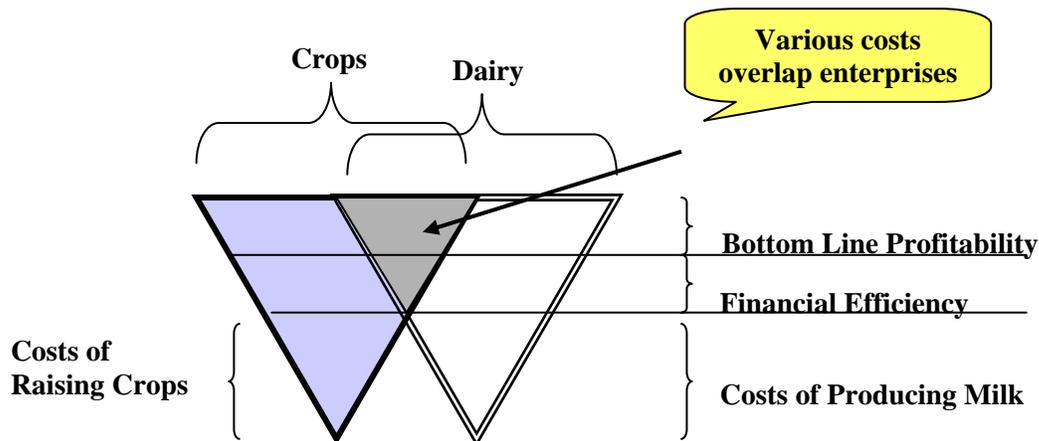
According to 2006 Wisconsin Agriculture Statistics (WASS) there were more dairy operations in the 50-100 cows than any other herd size in 2005. There were 6,400 dairy farms with 50-100 cows, this translated to 41.8% of the total dairy farms (15,300) in Wisconsin. This group averaged 80 cows per head. This herd size also produced 34% of all milk produced in Wisconsin. These numbers indicate this is an important group of dairy farms and as such the financial performance of these farms is of interest to the dairy industry in Wisconsin.

Bottom-Line Profitability Analysis

This profitability analysis considers the “whole” farm’s performance rather than only the dairy enterprise. The level of profitability is based on three Farm Financial Standards Council (FFSC) profitability measures: Net Farm Income (NFI), Rate of Return on Equity (ROE) and Rate of Return on Assets (ROA).

The procedure used for this analysis is to first identify dairy farms that exceed a benchmark profitability level of \$30,000 labor and management income per operator/manager. The profitability measure is applied across all farms, regardless of size, production, technology, etc. Secondly, the FFSC financial efficiency measures (e.g., operating expense ratio, interest expense ratio, etc.) are applied to compare more and less profitable farms and provide reasoning for differences in profitability. Third, the costs of dairy production are analyzed.

These three steps for analyzing profitability performance are reflected in the following diagram:



The inverted triangles represent crop and dairy enterprises. Initially, bottom line profitability is determined for the whole farm, including all enterprises (crop, dairy) because various costs overlap enterprises and are too difficult to allocate among the enterprises. This continues to be the case among enterprises as financial efficiency measures are applied. However, some costs can be specifically associated with an enterprise for analysis. For example, veterinary, breeding, and milk marketing costs can be analyzed directly related to the dairy enterprise.

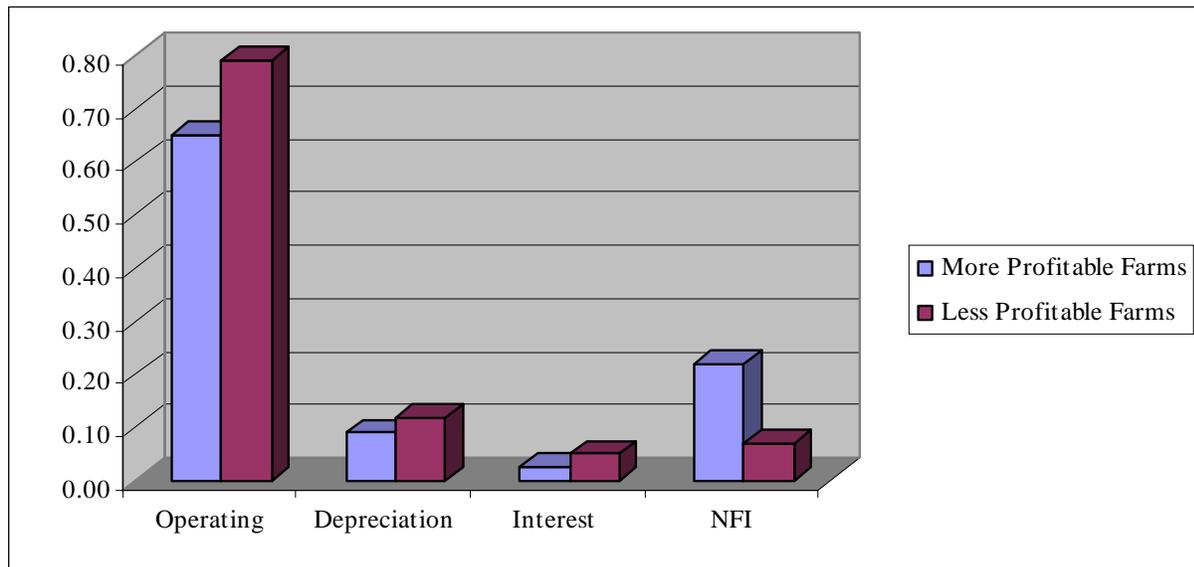
The profitability criterion used to determine more and less profitable farms is “labor and management income per operator/manager”. This represents the residual of net farm income per operator/manager after allocating payment to unpaid labor and a five percent return to owner equity. Farms that had \$30,000 or more labor and management income per operator/manager were considered to be “more profitable” farms. The \$30,000 value was selected as representing family living withdrawals for a typical Wisconsin family. Applying the profitability criterion of \$30,000 labor and management income per operator/manager, 135 farms were more profitable among all AgFA© farms in this data set (232 farms), reflecting a substantial difference in the average level of profitability between the more and less profitable farms. After applying the profitability criterion, farms were sorted by herd size and the 50-100 cow grouping was analyzed. This gave us a total of 106 farms, 62 of these were more profitable.

Table 1: Profitability Analysis
 Total Farms: 106, Herd Size: 50-100

	<i>More Profitable Farms (62)</i>	<i>Less Profitable Farms (44)</i>
Labor & Management Income per Operator/Manager	\$66,863	\$11,958
Net Farm Income	\$65,296	\$17,910
Return on Equity	6.66%	-2.19%
Return on Assets	6.52%	.22%

Why were some AgFA© dairy farms in the 50-100 cow range more profitable than others?
 Financial efficiency was higher among the more profitable farms.

Figure 1: Financial Efficiency



In Figure 1, the relatively lower operating costs (65% vs. 79%), depreciation (9% vs. 12%) and interest (3% vs. 5%) for more profitable farms means that their net farm income (NFI) was relatively higher (25% vs. 9%).

Table 2: Expense Categories
 Total Farms: 106, Herd Size: 50-100

	<i>Costs per Cow:</i>	
	<i>More Profitable Farms</i>	<i>Less Profitable Farms</i>
	<i>Total # Farms: 62</i>	<i>Total # Farms: 44</i>
	<i>Production per Cow: 20,544</i>	<i>Production per Cow: 19,133</i>
	<i>Average Herd Size: 71 Cows</i>	<i>Average Herd Size: 70 Cows</i>
Breeding	\$ 61	\$ 56
Custom Hire	60	10
Feed Purchased	653	777
Gas, Fuel, Oil	127	124
Interest	110	179
Labor	417	247
Repairs	212	203
Supplies	127	156
Utilities	98	101
Vet & Medicine	96	102
Other	318	245
TOTAL	\$2279	\$2200

Interest = Mortgage and Other Interest

Labor = Employee Benefits (Dependent and Non-dependent) + Labor Hired (Dependent and non-dependent)

Other = Fertilizer & Lime + Seed Purchase + Chemicals

Farm Expenses (Table 2) totaled, on average, \$79 more per cow for the more profitable farms. On a per cow basis, dairy expenses (Breeding, Gas, Labor, Repairs, and Other) were higher among the more profitable farms. The other expenses (Custom Hire, Feed, Interest, Supplies, Utilities and Vet & Medicine) were higher for the less profitable farms on a per cow basis.

Table 3: Capital per Cow Total

Farms: 106, Herd Size: 50-100

	<i>Capital per Cow:</i>	
	<i>More Profitable Farms (62)</i>	<i>Less Profitable Farms (44)</i>
Total Capital	\$11,978	\$10,311
Real Estate	1,854	1,321
Machinery & Equipment	237	252

Table 3 shows that in the 50-100 cow range, the less profitable farms, on average, had less capital per cow. Generally a lower level of investment is desirable because it will contribute to lower costs resulting in higher net income.

Table 4: Physical Labor Efficiency

Farms: 106, Herd Size: 50-100

	<i>More Profitable Farms</i>	<i>Less Profitable Farms</i>
	<i>(62)</i>	<i>(44)</i>
Cows per Worker	40	41
Milk Sold per Worker	979,260	911,972

Table 4 shows that the physical labor efficiency was slightly higher for the more profitable farms. The more profitable farms averaged approximately the same number of cows per worker (40 vs. 41) but sold more milk per worker (production per cow was also higher).

In Summary, more profitable farms (as compared to less profitable farms) had:

- Higher Financial Efficiency
- Higher Milk Production per cow
- Higher (physical) Labor Efficiency
- Higher Capital Investment per cow

The more profitable farms in the 50-100 cow size averaged 71 cows. Milk sold per cow ranged from 10,958 lbs. to 26,978 lbs., with 16 herds under 18,000 lbs. and 19 over 23,000 lbs. In other words, profitable performance was evident across production levels of farms in the 50-100 cow size.

Benchmark Guide

Benchmark values are based on the performance of AgFA© dairy farms in the 50-100 cow size, averaging greater than \$30,000 return to labor & management per operator/manager for 2005. The values reported are the median values for the more profitable farms.

	<i>Benchmark Values</i>	<i>Our Farm</i>
Financial Performance – Profitability		
Return to Labor & Mgt. Per Operator/Manager	66,863	
Rate of Return On Equity (ROE) - Percent	6.7	
Rate of Return On Assets (ROA) - Percent	6.5	
Net Farm Income	65,296	
Financial Efficiency *		
Operating	.65	
Depreciation	.09	
Interest	.03	
Net Farm Income	.22	
Financial Position		
Percent Owner Equity	84	
Investment per Cow	12,004	
Debt per Cow	1,246	
Size of Business		
Number of Cows	70.8	
Number of Workers	1.77	
Production Performance		
Lbs. Milk Sold per Cow	20,544	
Lbs. Milk Sold per Worker	979,260	
Dairy Enterprise Performance		
Milk Price per Cwt.	15.78	
Dairy Income per Cwt.	17.52	
Operating Cost per Cwt.	13.23	

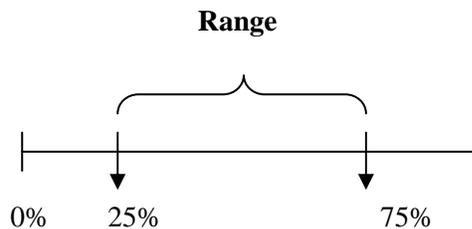
*** Financial Efficiency Ranges**

Operating Expense Ratio = <65%
 Depreciation Ratio = <10%
 Interest Expense Ratio = <10%
 Net Farm Income Ratio = >20%

Dairy Income = Cull Cows + Calves Sold + Milk Sold
 Operating Cost = Total Basic Cost + Wages and Benefits

Performance among Dairy Farm Businesses

The following tables present the median and range values for key performance variables for AgFA© dairy farms in the 50-100 cow size reporting the number of operators on the farm and averaging greater than \$30,000 return to labor & management per operator/manager for 2005. The median (or middle) value is presented instead of the mean to guard against the potential influence of extreme values. For example a 1000 cow herd could significantly affect “average” herd size for a relatively large number of farms with most herds under 100 cows. The range is for the middle 50% of the farms, represented by the 1st and 3rd quartile values. In other words, 25% of the farms will have values lower than the 1st quartile and 25% of the farms will have values higher than the 3rd quartile. This range provides a good idea as to the performance among all farms while not misleading about performance by including the absolute lowest and highest values. These values are sometimes outliers because of unique circumstances and could potentially misrepresent performance.



Financial Performance

	<i>Median</i>	<i>Range</i>
Net Farm Income (\$)	67,793	46,279 - 92,252
Labor & Mgt Income per Operator (\$)	72,459	44,827 - 89,024
Return On Assets (%)	3.20	3.90 - 9.37
Return On Equity (%)	6.13	3.50 - 10.79

Financial Position

	<i>Median</i>	<i>Range</i>
Owner Equity (%)	84	77 - 100
Investment per Cow(\$)	12,005	9,368 - 14,406
Debt per Cow (\$)	1,246	50 - 2,637

Dairy Enterprise Performance – Per Cwt. and Per Cow

	<i>Median</i>	<i>Range</i>
Milk Price per Cwt (\$)	15.78	15.40 – 16.14
Dairy Income per Cwt (\$)	17.33	16.73 – 18.02
Operating Cost per Cwt (\$)	12.69	11.25 – 14.55
Total Cost per Cwt (\$)	16.93	15.29 – 18.63
Total Income per Cwt (\$)	19.45	18.34 – 21.50

	<i>Median</i>	<i>Range</i>
Milk Income per Cow (\$)	\$3,273	2,856 – 3,593
Dairy Income per Cow (\$)	\$3,619	3,102 – 4,082
Operating Cost per Cow(\$)	2,586	2,294 – 3,101
Total Cost per Cow (\$)	3,390	3,167 – 3,824

Costs of Production - Per Cwt. and Per Cow

	<i>Median</i>	<i>Range</i>
Breeding per Cwt (\$)	.30	.22 - .36
Custom Hire per Cwt (\$)	.27	.10 - .55
Feed Purchased per Cwt (\$)	3.21	2.28 – 4.06
Gas, Fuel, Oil per Cwt (\$)	.60	.39 - .78
Interest per Cwt (\$)	.32	.0 - .76
Labor per Cwt (\$)	1.80	.99 – 2.75
Repairs per Cwt (\$)	.90	.66 – 1.27
Supplies per Cwt (\$)	.61	.41 – 1.01
Utilities per Cwt (\$)	.47	.35 - .58
Vet. & Medicine per Cwt (\$)	.45	.30 - .54
Related Dairy Costs per Cwt (\$)	1.44	.83 – 1.98

	<i>Median</i>	<i>Range</i>
Breeding per Cow (\$)	68	40 – 78
Custom Hire per Cow (\$)	63	19 – 118
Feed Purchased per Cow (\$)	640	471 -850
Gas, Fuel, Oil per Cow (\$)	118	83 – 160
Interest per Cow (\$)	67	0 – 144
Labor per Cow (\$)	378	191 – 584
Repairs per Cow (\$)	202	133 – 261
Supplies per Cow (\$)	110	79 – 195
Utilities per Cow (\$)	95	72 – 119
Vet. & Medicine per Cow (\$)	92	55 – 118
Related Dairy Costs per Cow (\$)	290	175 - 423

Cow and Worker Performance

	<i>Median</i>	<i>Range</i>
Lbs. Milk Sold per Cow	21,239	17,850 – 23,186
Cows per Worker	40	39 – 42
Lbs. Milk Sold per Worker	843,453	703,840 – 960,665