

**Characteristics of Highly Profitable Dairy Farm Businesses:  
Cornell University Cooperative Extension  
Dairy Farm Business Summary Cooperators  
Western & Central Plain Region – 2005**

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## Summary

Comparisons of average financial performance and other farm business performance data for the Western and Central Plain Dairy Farm Business Summary Region as a whole to a group of most profitable businesses from the region help to highlight characteristics of the most profitable dairy farm businesses. Results suggest that, as a group, the most profitable dairy farm businesses are larger, more productive, more labor efficient, and better able to achieve lower costs per hundredweight when compared to the region as a whole. Per cow costs of production, and per cow accrual amounts for expense items were not that different between the two groups, while averages per hundredweight were dissimilar – the effect of above average milk sold per cow. This aspect of the data suggests the following characteristic for the most profitable businesses. The most profitable businesses tend to be operated by dairy farm business owners that are able to identify factors that limit the business' ability to achieve above average, but not necessarily top milk production, and successfully implement changes to the farm business that address limiting factors, while maintaining costs per cow near average. Although monitoring of all expense items is valuable, results suggest that focusing initially on the following expense items might prove useful: dairy grain and concentrate purchases; hired labor; interest paid; machinery repairs and farm vehicle expenses; replacement livestock purchases; custom boarding.

## Introduction

Managers of dairy farm businesses throughout New York State (NYS) have been participating in Cornell University Cooperative Extension's Dairy Farm Business Summary (DFBS) Program since the early 1950's. The primary objective of the DFBS Program is to help farm managers improve business and financial management aspects of their businesses through appropriate use of historical data, and the application of modern farm business analysis techniques. The DFBS Program provides managers with business and financial information to identify and evaluate strengths and weaknesses of the farm business, and to monitor performance over time.

The DFBS program provides data to study the NYS dairy industry. Each year, researchers use DFBS data to describe the financial condition and performance of NYS' dairy farm businesses at the regional and state levels, including reports that focus on farms by size and production system, for example, small herds, large herds and farms that practice intensive grazing (for example, Knoblauch and others, 2006). Researchers use DFBS Program data to study other topics of interest – for

example, the impact of bST use on dairy farms, and the competitiveness of small dairy farms among other topics (Tauer 2006, 2001).

The purpose of this work is to identify some characteristics of the most profitable dairy farm businesses in the Western and Central Plain (W&CP) DFBS region. The Western and Central Plain DFBS Region encompasses the following counties: Cayuga; Erie; Genesee; Livingston; Monroe; Niagara; Ontario; Orleans; Wayne; Wyoming; and Yates.

## Approach

The approach used is to compare averages of financial condition and performance, and other farm business performance measures for the W&CP Region as a whole to a group of most profitable businesses for the purpose of identifying differences, and therefore highlighting some of the characteristics of the most profitable dairy farm businesses. Cornell University Cooperative Extension’s DFBS Program for 2005 provides the data for the calculation of averages. The most profitable group, the group of top performers, is the group of farms from the W&CP Region that comprised the top 25 percent of farms when sorted by the rate of return on all capital (RROA) without appreciation, a measure of profitability. The approach utilizes two tools that DFBS cooperators use to compare performance measures from their businesses to measures from groups of DFBS cooperators – the regional farm business chart and the summary of accrual receipts and expenses per cow and per hundredweight. The analysis reported upon here is not a detailed statistical analysis that considers other statistical measures such as variability of data around a mean, average, and is limited in this respect.

## Data

The analysis utilizes 2005 data from 49 DFBS cooperators, 47 DFBS cooperators that participated in both 2004 and 2005, and 13 DFBS cooperators identified as the most profitable based upon the RROA without appreciation. The average RROA without appreciation for the region as a whole was 7.23 percent, while the average for the group of most profitable businesses was 11.96 percent. Size data provide a general description of the two groups (Table 1).

<b>Table 1 – Size of Business Comparison: 47 W&amp;CP Region Dairy Farms &amp; 13 Most Profitable W&amp;CP Region Dairy Farms 2005 April 2006 Data</b>		
<b>Size of Business Factor</b>	<b>Same 47 W&amp;CP Region Dairy Farms</b>	<b>Same 13 Most Profitable W&amp;CP Region Dairy Farms</b>
Average Number of Cows	506	735
Average Number of Heifers	400	578
Milk Sold (pounds)	11,628,137	17,800,648
Worker Equivalent	11.06	14.87
Total Tillable Acres	1,022	1,386

## Results & Discussion

### FARM BUSINESS DATA CHART

DFBS cooperators use the Farm Business Chart as a tool to analyze their businesses (Table 2). The five figures in each column represent the average of each 20 percent or quintile of farms included in the summary. Cooperators compare their businesses by drawing a line through or near the figure in each column, which represents their current level of performance. Cooperators use this information to identify possible areas of improvement within the business, areas where more challenging goals are needed. For these areas, the cooperator looks to identify underlying reasons for differences as part of the problem solving effort for the purpose of identifying possible changes to the business that will lead to improved results. For this analysis, the chart identifies performance levels for the most profitable group, and the region as a whole based upon averages for the two groups. Similarities and differences suggest characteristics of the group of most profitable businesses in the region.

**Table 2 – Farm Business Chart for DFBS Cooperators:  
49 W&CP Region Dairy Farms, with Approximate Performance Levels for  
47 W&CP Region Dairy Farms & 13 Most Profitable Dairy Farms 2005 – April 2006 Data**

Size of Business			Rate of Production			Labor	
Worker Equivalent	# of Cows	Pounds Milk Sold	Pounds Milk Sold Per Cow	Tons Hay Crop DM/Acre	Tons Corn Silage Per Acre	Cows Per Worker	Pounds Milk Sold Per Worker
23.77	1,161	28,506,522	25,474	5.2	24	58	1,292,737
<del>14.86</del>	<del>703</del>	<del>16,233,182</del>	<del>23,827</del>	4.4	21	50	<del>1,119,798</del>
<b>9.12</b>	<b>409</b>	<b>8,231,558</b>	<b>22,419</b>	<b>3.5</b>	<b>19</b>	<b>43</b>	<b>1,012,467</b>
5.84	238	5,282,612	20,830	2.8	16	38	786,323
3.06	100	1,868,490	16,499	1.9	14	29	555,465

  

Cost Control						
Grain Bought Per Cow	%Grain is of Milk Receipts	Machinery Costs Per Cow	Labor & Machinery Costs Per Cow	Feed & Crop Expenses Per Cow	Feed & Crop Expenses Per Cwt. Milk	
\$558	18%	\$361	\$1,001	\$911	\$4.33	
<del>812</del>	<del>23</del>	533	1,216	1,055	<del>4.79</del>	
<b>909</b>	<b>25</b>	<b>598</b>	<b>1,357</b>	<b>1,195</b>	<b>5.35</b>	
987	28	722	1,512	1,273	5.92	
1,100	32	1,037	1,948	1,432	7.09	

  

Value & Cost of Production			Profitability			
Milk Receipts Per Cow	Operation Cost Milk Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income w/Appreciation	Net Farm Income w/o Appreciation	Labor & Mgt. Income Per Operator	Change in Net Worth w/Appreciation
<del>\$4,055</del>	\$10.09	<del>\$13.88</del>	\$1,157,899	\$764,600	<del>\$288,815</del>	\$948,918
<b>3,703</b>	<del>11.45</del>	14.71	554,145	331,877	139,397	438,706
3,545	<b>12.12</b>	<b>15.60</b>	<b>313,996</b>	<b>194,649</b>	<b>57,153</b>	<b>202,156</b>
3,357	12.94	16.57	165,731	92,720	21,576	100,469
2,699	15.22	22.43	37,760	3,540	-74,480	-18,050

**Bolded Values:** Approximate performance levels, same 47 Western & Central Plain Region Farms 2004 & 2005 (April 2006 data).

"—": Approximate performance levels, top 25 percent of Western & Central Plain Region Farms based upon the rate of return on all capital without appreciation 2004 & 2005 (April 2006 data).

Farm business chart results suggest that the most profitable W&CP Region dairy farms tend to be: larger when compared to region as whole; more productive, for example, they achieve above average milk sold per cow, but, notably, not milk sold per cow that would necessarily place the group in the top quintile for the region as a whole; and more labor efficient. Average milk sold per cow for the group of most profitable dairy farms was 24,226 pounds compared to an average of 22,980 pounds for the region as a whole. Average accrual milk receipts per cow for the group of top performers was greater when compared to the region as a whole. Regarding cost control, per cow averages for the two groups tend to be similar, while per hundredweight averages tend to differ between the top performing group and the region as a whole. Consider the more complete look at cost control factors on per cow and per hundredweight bases in Table 3.

<b>Table 3 – Selected Cost Control Factors: Per Cow &amp; Per Hundredweight 47 W&amp;CP Region &amp; 13 Most Profitable W&amp;CP Region Dairy Farms 2005 – April 2006 Data</b>				
<b>Item</b>	<b>Same 47 W&amp;CP Region Dairy Farms</b>		<b>Same 13 Most Profitable W&amp;CP Region Dairy Farms</b>	
	<b>Per Cow</b>	<b>Per Cwt.</b>	<b>Per Cow</b>	<b>Per Cwt.</b>
Grain Bought	923	4.02	903	3.73
Machinery Costs	609	2.65	599	2.47
Labor & Machinery Costs	1,348	5.87	1,324	5.46
Feed & Crop Expenses	1,192	5.19	1,153	4.76

Averages for the above expense items for the group of most profitable farms are not that much less than the averages for the region as a whole when compared on a per cow basis, while differences between the two groups on a per hundredweight basis would appear to be notable. Above average production per cow for the most profitable group underlies the results.

Historically, costs of producing milk per hundredweight are linked quite closely to profitability measures – profitability levels decline as cost of producing milk measures increase. DFBS cooperators often focus on cost of producing milk per hundredweight measures when monitoring performance. Cost of producing milk comparisons per cow and per hundredweight between the top performing group and the region as a whole exhibit similar relationships to those results from the farm business chart analysis (Table 4).

<b>Table 4 – Per Cow &amp; Per Hundredweight Costs of Producing Milk Measures W&amp;CP Region &amp; Most Profitable W&amp;CP Region Dairy Farms 2005 – April 2006 Data</b>				
<b>Cost of Producing Milk per Hundredweight</b>	<b>Same 47 W&amp;CP Region Dairy Farms</b>		<b>Same 13 Most Profitable W&amp;CP Region Dairy Farms</b>	
	<b>Per Cow</b>	<b>Per Cwt.</b>	<b>Per Cow</b>	<b>Per Cwt.</b>
Operating Cost <sup>a</sup>	2,796	12.17	2,768	11.43
Purchased Inputs Cost <sup>b</sup>	3,127	13.61	3,100	12.80
<b>Total Cost <sup>c</sup></b>	<b>3,498</b>	<b>15.22</b>	<b>3,432</b>	<b>14.17</b>

<sup>a</sup> Operating cost of producing milk is estimated by deducting non-milk accrual receipts from total accrual operating expenses including expansion livestock purchased.

<sup>b</sup> Purchased inputs cost of producing milk is estimated by adding depreciation to the operating cost.

<sup>c</sup> Total cost of producing milk is estimated as the sum of the operating cost, depreciation, the value of unpaid family labor, the value of operators' labor and management, plus the interest charge for using equity capital.

As with the individual expense items from the business chart and Table 3, similarities between the two groups with regard to per cow values contrast with the considerable differences between the two groups with regard to per hundredweight values. Results again suggest that above average production per cow in part underlies differences in the per hundredweight values.

### **ACCRUAL OPERATING RECEIPTS & EXPENSES**

Another tool that DFBS cooperators use to monitor their businesses' financial condition and performance is the summary of accrual receipts and expenses on per cow and per hundredweight bases. Table 5 compares averages for the region as a whole to averages for the group of most profitable businesses.

Average accrual operating receipts per cow for the group of most profitable farms were \$4,482 compared to \$4,242 for the region as a whole -- \$240 per cow greater. Average per cow accrual operating receipts for milk for the group of top performers were \$3,891 compared to \$3,647 for region as a whole -- \$244 per cow greater. Greater milk sold per cow, 24,226 pounds versus 22,980, and greater receipts per hundredweight, \$16.06 versus \$15.87, underlie these results.

Total accrual operating expenses per cow for the group of most profitable businesses averaged \$3,311 compared to \$3,356 for the region as a whole – less by \$45 per cow. Items where the group of top performers' average per cow values were less than the values for the region as a whole totaled \$121 per cow. Dairy grain and concentrate, replacement livestock, custom boarding, machinery repairs and farm vehicle, interest paid, real estate rent and lease, seeds and plants, and dairy roughage expenses accounted for about 80 percent of this total. Items where the group of most profitable businesses' per cow values were greater than the values for the region as whole totaled \$76 per cow. Machinery hire, rent and lease, land, building and fence repair, hired labor, bST, and miscellaneous expenses accounted for about 80 percent of the total.

**Table 5 – Accrual Receipts & Expenses per Cow & per Hundredweight: Same 47 & 13 Most Profitable W&CP Region Dairy Farms 2005**  
**April 2006 Data**

<b>Item</b>	<b>Same 47 W&amp;CP Region Farms Per Cow</b>	<b>Same 13 Most Profitable W&amp;CP Region Farms Per Cow</b>	<b>Difference</b>	<b>Same 47 W&amp;CP Region Farms Per Cwt.</b>	<b>Same 13 Most Profitable W&amp;CP Region Farms Per Cwt.</b>	<b>Difference</b>
<b>Accrual Operating Receipts</b>						
Milk	3647	3891	-244	15.87	16.06	-0.19
Dairy Cattle	241	271	-30	1.12	1.05	-0.07
Dairy Calves	84	71	13	0.37	0.29	0.08
Other Livestock	9	2	7	0.04	0.01	0.03
Crops	73	89	-16	0.32	0.37	-0.05
Miscellaneous Receipts	189	157	32	0.82	0.65	0.17
<b>Accrual Operating Expenses</b>						
Hired Labor	630	641	-11	2.74	2.65	0.09
Dairy Grain and Concentrate	923	903	20	4.02	3.73	0.29
Dairy Roughage	79	73	6	0.34	0.30	0.04
Machine Hire, Rent & Lease	55	74	-19	0.24	0.31	-0.07
Machinery Repair & Vehicle Expense	174	163	11	0.76	0.67	0.09
Fuel, Oil & Grease	117	117	0	0.51	0.48	0.03
Replacement Livestock	32	14	18	0.14	0.06	0.08
Breeding	42	40	2	0.18	0.17	0.01
Veterinary & Medicine	134	138	-4	0.58	0.57	0.01
Milk Marketing	156	159	-3	0.68	0.66	0.02
Bedding	67	71	-4	0.29	0.29	0
Milking Supplies	74	73	1	0.32	0.30	0.02
Cattle Lease	3	1	2	0.01	0.01	0
Custom Boarding	83	67	16	0.36	0.28	0.08
BST Expense	49	59	-10	0.21	0.25	-0.04
Livestock Professional Fees	10	9	1	0.04	0.04	0
Other Livestock Expense	24	24	0	0.1	0.1	0
Fertilizer & Lime	86	82	4	0.38	0.34	0.04
Seeds & Plants	57	49	8	0.25	0.20	0.05
Spray & Other Crop Expense	38	35	3	0.17	0.14	0.03
Crop Professional Fees	9	12	-3	0.04	0.05	-0.01
Land, Building & Fence Repair	50	62	-12	0.22	0.25	-0.03
Taxes	45	43	2	0.20	0.18	0.02
Real Estate Rent & Lease	66	57	9	0.29	0.24	0.05
Insurance	41	36	5	0.18	0.15	0.03
Utilities	91	94	-3	0.39	0.39	0
Interest Paid	183	172	11	0.80	0.71	0.09
Other Professional Fees	17	16	1	0.07	0.07	0
Miscellaneous	20	27	-7	0.09	0.11	-0.02

Total accrual operating expenses per hundredweight for the group of most profitable farms from the region averaged \$13.68 compared to \$14.60 for the region as a whole – less by \$0.92 per hundredweight. Items where the top performing group's per hundredweight values were less than the values for the region's as a whole totaled \$1.09 per cwt. Dairy grain and concentrate, hired labor, interest paid, machinery repairs and farm vehicle, replacement livestock, custom boarding, seeds and plants, real estate rent and lease, and dairy roughage expense items accounted for about 80 percent of this total. Items where the values from the group of most profitable businesses were greater than the region's values totaled \$0.17 per hundredweight. Machinery hire, rent and lease, bST, and land, building, and fence repair expenses accounted for about 80 percent of this total.

Although monitoring of all receipt and expense items is valuable, results suggest that focusing initially on a few items might prove useful. Regarding receipt items, milk sold and the underlying factors of milk sold per cow and receipts per hundredweight might receive emphasis. Regarding expense items, results suggest focusing initially on the following items: dairy grain and concentrate purchases; hired labor; interest paid; machinery repairs and farm vehicle expenses; replacement livestock purchases; and custom boarding. Monitoring, problem solving efforts might look like this: How do the measures, performance levels for my farm business compare to those of, for example, the group of most profitable dairy farm businesses? Which performance levels differ? Why do they differ? Try to uncover the underlying reasons for the differences. Do the underlying reasons suggest possible areas for change in the farm business?

## Conclusions

For 2005, the average rate of return on all capital without appreciation, a measure of profitability, for 47 Western and Central Plain Region Dairy Farm Business Summary cooperators was 7.2 percent. The average rate of return on all capital without appreciation for a group of 13 most profitable businesses representing the top 25 percent of farms based upon this same measure of profitability was 12.0 percent. Averages for size of business factors for the group of top performers were greater when compared to the averages for the region as a whole. Averages for rate of production factors tended to be greater for the group of most profitable businesses when compared to the averages for the region as a whole. For example, average milk sold per cow for the most profitable group was above the average for the region as a whole, but, notably, was not in the highest quintile for the region as a whole. Averages for costs of production per hundredweight measures for the group of top performers were lower than averages for the region as a whole.

Per cow costs of production, and per cow accrual amounts for expense items were not that different between the two groups, while averages per hundredweight were dissimilar – the effect of above average milk sold per cow. This aspect of the data suggests the following characteristic for the most profitable businesses. The most profitable businesses tend to be operated by dairy farm business owners that are able to identify factors that limit the business' ability to achieve above average, but not necessarily top milk production, and successfully implement changes to the farm business that address limiting factors, while maintaining costs per cow near average. Although monitoring of all expense items is valuable, results suggest that focusing initially on the following expense items might prove useful: dairy grain and concentrate purchases; hired labor; interest paid; machinery repairs and farm vehicle expenses; replacement livestock purchases; custom boarding.

## References

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