ESTIMATED MILK PRODUCTION COSTS and SELECTED FINANCIAL MEASURES IN 1995[1] ON 928 WISCONSIN DAIRY FARMS

by Gary Frank and Jenny Vanderlin[2]

Introduction

Agricultural production costs are generally based on some unit of output. For example, corn production costs are usually calculated using a bushel of U.S. No. 2 corn; however this base may also be per ton or per acre. Like corn, costs for milk production may be based on various measures. Milk production costs are calculated on a per cow basis for budgeting and planning purposes and on a per hundred weight basis for analyzing a dairy's enterprise. This paper focuses on milk production costs per hundredweight. Methods for calculating cost per hundredweight differ. The procedure in this publication is an "output equivalent." This is useful in examining businesses and enterprises that have multiple sources of income. Besides knowing a farm's production costs, financial measures also need to be examined. In this paper, the authors use and describe the Farm Financial Standard Task Force (FFSTF) measures.

In this study of 1995 records, 928 dairy farms averaged a basic cost of $7.41 per hundredweight equivalent on income of $12.86 per CWT EQ. Their total allocated expenses per hundredweight equivalent of milk sold averaged $10.96. Total allocated expenses do not include a charge for unpaid labor and management or a return to equity capital. These and the other averages presented can be used by dairy producers to compare with their farms and to subsequently set their goals.

Data Source

---

1 Estimates of 1992 , 1993 and 1994 milk production costs are published in the series Managing The Farm, Volume 27:3, Volume 28: 1 and Volume 28:4 respectively. The results reported in those papers and the results reported in the current paper are not based on a random sample of dairy producers. Therefore, the differences between years should not be interpreted as changes in the cost of producing milk.

2 Center for Dairy Profitability, College of Agricultural and Life Sciences, and Cooperative Extension, University of Wisconsin-Madison.
They are grateful to Arlin Brannstrom, Bruce Jones for their constructive comments.

Lakeshore Farm Management Association and Fox Valley Management Association[3] originally collected this data. Personal affiliated with these associations helped individual farm managers reconcile their financial data. Individual farm managers used a number of different manual and computerized record keeping systems to enter the initial financial records, including the Agricultural Accounting and Information Management System (AAIMS).

In 1995, 945 financial data sets were received from Lakeshore Farm Management and Fox Valley Associations. Some of these records had milk income that was less than 60 percent of their total income. Those farms are not included in this analysis. However, the dairy farms included in the study had a total of more than 70,000 cows and produced more that 1.3 billion pounds of milk.

Comparing the Studied Dairy Farms to Other Dairy Farms

The dairy farms in this study averaged 76 cows, with 18,463 pounds of milk sold per cow. In comparison, Wisconsin's 1995 herd size averaged 53.2 cows, with an average of 15,397 pounds of milk sold per cow. Wisconsin DHI (1995) herds averaged 64.6 cows, with production per cow estimated at 18,877 pounds. Table 1 shows range and distribution of milk sold per cow on the farms studied and on Wisconsin DHI farms.

Table 1

Milk Sold per Cow

	Study Farms		Wisconsin DHI
Pounds per Cow	Number of Farms	Percent of Farms*	Percent of Herds*
Less than 13,000	46	5	2
13,001 - 15,000	85	9	6
15,001 - 17,000	162	17	16
17,001 - 19,000	241	26	26
19,001 - 21,000	420	26	27
21,001 - 23,000	112	12	5
greater than 23,000	42	5	7

* Percent columns may not add to 100 due to rounding.

Selected Financial Measures of Studied Farms

The Farm Financial Standards Task Force (FFSTF) has recommended 16 financial measures and their method of calculation as a starting point for analysis of a farm's finances. Below are the formulas for most of these measures and their average value when these formulas and their calculation methods were used on these 928 farms. Some recommended measures were not calculated because the data set did not contain the necessary information.

[3] The authors wish to thank Rolyn Jorgenson and other members of the Lakeshore Farm Management Association staff as well as Phil Christman and members of the Fox Valley Management Association for their cooperation.

Profitability Measures

Net Farm Income From Operations (NFIFO) =
Total Farm Income - Total Farm Expense (including all wages and benefits paid)

The average NFIFO equaled $32,496 per farm or $425 per cow.

Total farm income averaged $219,421 per farm in this sample of 928 farms.
Total farm expense averaged $184,926 per farm.

Rate of Return on Assets (ROROA) =
(NFIFO + Interest Paid - Unpaid Labor & Management Charge)
/ Average Total Farm Assets

The average ROROA equaled 5.57%

The ROROA will be studied in more detail later in this paper. It will be investigated based on production per cow, herd size, total milk sales, total investment, and cost of production.

The interest paid averaged $15,678 per farm.
The "Unpaid Labor & Management Charge" averaged $17,328 per farm.
Average total assets per farm equaled $552,279.

Rate of Return on Equity (ROROE) =
(NFIFO - Unpaid Labor & Management Charge) / Average Total Farm Equity

The average ROROE equaled 4.18%

The net worth (equity) averaged $360,554 per farm.

Net Profit Margin (Margin) =
(NFIFO + Interest Paid - Unpaid Labor & Management Charge) / Total Farm Income

The average net profit margin equaled 14.01%.

Liquidity Measures

Current Ratio =
Current Assets / Current Liabilities

The average reported Current Ratio equaled 13.71.

This ratio is well above the goal of 1.25 or higher. It's felt that the ratio was this favorable because "Current Liabilities" is often misunderstood. Current liabilities are accounts payable, operating loans, deferred interest payments, and other current liabilities plus the current portion of all the non-current loans. (The current portion of a non-current loan is the amount of non-current loan's principal due in the next 12 months.) The misunderstanding about (and incorrect accounting for) the last item will cause the Current Ratio to be unusable. Unfortunately, this is too often the case.

The FFSTF recommends a second liquidity ratio called "Working Capital." Its' formula is: Current Assets - Current Liabilities. This formula is generally unusable for the reason stated in the above paragraph, and therefore two alternative liquidity measures are calculated. They are Cash Ratios: one excludes the cash interest paid and the other includes cash interest paid.

Cash Ratio Lite (excluding cash interest paid) =
(Cash Farm Expense - Interest Paid) / Cash Farm Expense * 100

The average Cash Ratio Lite equaled 65.42%.

The cash farm expense averaged $160,526 per farm.
The cash farm income averaged $221,398 per farm.

Cash Ratio (including cash interest paid) =
Cash Farm Expense / Cash Farm Expense * 100

The average Cash Ratio equaled 72.51%.

Solvency Measures

Debt to Asset Ratio =
Average Total Farm Liabilities / Average Total Farm Assets

The debt to asset ratio on the 928 farms in this sample averaged 0.35.

Total liabilities averaged $191,726 per farm.

Debt to Equity Ratio (Leverage Ratio) =
Average Total Farm Liabilities / Average Farm Net Worth

The leverage ratio averaged 0.53.

Efficiency Measures

Asset Turnover Ratio =
Total Farm Income / Average Total Assets

The average asset turnover ratio equaled 0.40.

(Notice: the asset turnover ratio times the net profit margin equals ROROA.)

Basic Cost Ratio* =
(Total Farm Expense - Wages & Benefits Paid - Interest Paid - Depreciation) / Total Farm Income

The average basic cost ratio equaled 0.576.

Wage & Benefits Paid Ratio* =
Wages & Benefits Paid / Total Farm Income

The average wage & benefits paid ratio equaled 0.083

*Note: In the FFSTF recommendations these two ratios are combined into one ratio called the "Operating Expense Ratio."

The amount of wages and benefits paid averaged $18,125 per farm.

Interest Paid Ratio =
Interest Paid / Total Farm Income

The average interest paid ratio equaled 0.071

Depreciation Expense Ratio =
Depreciation / Total Farm Income

The average depreciation expense ratio equaled 0.122.

NFIFO Ratio =
NFIFO / Total Farm Income

The average NFIFO ratio equaled 0.148.

Note: the sum of these last 5 ratios must equal 1.

Repayment Capacity Measures

Principal Repayment and Capital Replacement Margin* =
NFIFO + Depreciation + Capital Sales - Unpaid Labor & Management Charge

The average RR margin equaled $61,886 per farm or $814 per cow.

*Note: This measure is not in the FFSTF recommendations. The FFSTF recommends 2 measures like this one, but they require a knowledge of: a) non-farm income, b) annual scheduled principal and interest payments, and c) cash withdrawals for family living and income tax payments. Since this data set did not contain those values, this measure is used as their proxy.

Output Equivalent

Costs per cow may not be the best performance measure, as all herd averages are not identical. However, when calculating production costs per unit of output (in a production process) one must decide which unit of output should be used. Using a hundredweight of milk produced or sold has some limitations because the other sources of income (e.g. cull cows, calves, etc.) produced per hundredweight vary from farm to farm. To uniformly calculate cost per output unit, the selected unit must treat all the income produced by the dairy farm business equally.

This study uses an output (income) equivalent unit, the most meaningful measure when a dairy farm business has multiple sources of income. The measure is calculated by summing the income from the sale of all products produced on a farm (or in a production process) and dividing by the price of the major product. The resulting value is the quantity of the major product required to generate an equivalent income, if the major product were the only output of the production process.[4]

Dairy farms producing milk have numerous sources of income: cull cows, calves, CCC milk assessment refund, cooperative dividends, property tax credit on income taxes, crop-related government payments, etc. This large number of income sources makes using an equivalent output unit essential. In addition, on most dairy farms the cost of producing crops sold for cash cannot be separated from the cost of producing crops fed to the dairy herd. The farm's total income (including cash sales of crops and changes in the value of feed and cattle inventories) must be included when calculating output equivalent units.

For this analysis the output equivalent unit is **Hundredweight of Milk Sales Equivalent** (CWT EQ). The output measure for an individual farm is calculated with the formula:

$$\frac{\text{Total Income from the Farm Business}}{\text{Average Price Received per Hundredweight of Milk Sold on That Farm}}$$

However, when studying a group of farms or comparing farms that may be receiving different milk prices, all producers should use the same price. In this study the formula is:

$$\frac{\text{Total Income from the Farm Business}}{\text{U.S. All Milk Price per Hundredweight (for 1995)}}$$

Therefore, in this study the divisor was $12.86, the estimated U.S. average all milk price for 1995, exactly the same as Wisconsin's estimated all milk price.

Cost of Production per Hundredweight Equivalent

"Basic farm expenses" are "total allocated expenses" minus interest paid, labor hired, and depreciation expenses. Basic farm expenses is a useful measure when comparing one farm to another because it is not influenced by the farm's debt structure, the amount of paid versus unpaid labor, or the capital consumption claimed (depreciation). The range in basic farm expenses for the group of farms studied was $4.15 to $14.01 per CWT EQ.

An average of $7.41 was calculated by summing the total basic costs on all farms and dividing by the total number of CWT EQ produced. Thirty-eight percent of the farms had a basic cost of $7.00 per CWT EQ or less. In Table 2 selected ranges of basic farm expenses are presented. It shows the number and percent of farms in each range.

---

[4] A different method subtracts all non-milk income from the farm's expenses and then divides the remaining cost by the hundredweight of milk sold. This value is called the cost of production per hundredweight of milk sold. This method assumes that all non-milk production is at cost. This makes milk production the residual claimant of all non-milk profits or losses.

The $7.41 average basic costs means that the average farmer studied had $5.37 of income available per CWT EQ to use for other costs (income per CWT EQ = 12.86 minus basic expenses of $7.41 per CWT EQ). These are items such as hired labor, scheduled principal and interest payments, a down payment when purchasing assets, and/or a family living draw.

Table 2

Number of Herds in Basic Cost Production Ranges
(928 Farms)

Expenses per CWT EQ	Number of Farms	Percent of Farms[a]
Less than $ 5.00	24	3
5.01 - 6.00	101	11
6.01 - 7.00	224	24
7.01 - 8.00	289	31
8.01 - 9.00	166	18
9.01 - 10.00	73	9
greater than 10.00	51	5

[a] Percent column may not add to 100 due to rounding.

Table 3 shows costs per CWT EQ for selected expense categories that match the expense categories on Schedule F (Federal tax form). It shows the average of all farms in the study, the 20 percent of farms with the lowest costs per CWT EQ, and has a place for you to enter your farm's costs. To contrast your farm to the values in Table 3, follow the directions in the appendix and divide the number of CWT EQ calculated there into the your Schedule F expense items and compare.

The goal for basic farm expenses per CWT EQ is $7.00 or less. This goal is based on a $13.00 milk price and the average interest, capital, and labor and management (sum of hired labor and family living) costs. If your basic farm costs are above $7.00 per CWT EQ, you should place some effort into cost containment.

The average column on Table 3 will help you identify categories of expense that are above average. For instance, suppose your insurance costs are $0.25 per CWT EQ and the average is $0.18, you should find out why this difference exists and what you can do about getting the cost down.

Examine each category that is above average, try to find out why it is above average and if there is anything you can do about it. If there is, do it! Closely examine a category even if it is only 2 or 3 cents above average. There are over 20 categories and a couple of pennies on each adds to over a half dollar quickly.

Table 3

Study Farms' Cost per CWT EQ -Selected Expense Categories

Item	Cost Per CWT EQ Average	Low 20%	Your Farm	Item	Cost per CWT EQ Average	Low 20%	Your Farm
Car & Truck Expense	$0.05	$0.05	___	Utilities	$0.28	$0.25	___
Chemicals	0.18	0.16	___	Vet Fees & Medicine	0.37	0.27	___
Custom Hire	0.21	0.13	___	Breeding Fees	0.15	0.14	___
				Other Expenses	0.32	0.23	___
Feed Purchase	2.12	1.44	___				
Fertilizer and Lime	0.47	0.41	___	Non-cash Adjustments	-0.02	-0.15	___
Freight and Trucking	0.11	0.10	___	**Basic Costs / CWT EQ**	**$ 7.41**	**$5.66**	___
Fuel and Oil	0.26	0.22	___				
Farm Insurance	0.18	0.16	___	Mortgage Interest &			
Marketing Fees	0.28	0.27	___	Other Interest	0.92	0.71	___
Rent/Lease Equipment	0.07	0.03	___	Emp Benefit Program	0.24	0.25	___
Rent/Lease Other	0.54	0.30	___	Labor Hired	0.83	0.81	___
Repairs & Maintenance	0.77	0.69	___				
				Depreciation	1.57	1.78	___
Seeds & Plants Purch	0.33	0.30	___	**Other Costs / CWT EQ**	**$ 3.55**	**$3.55**	___
Supplies Purchased	0.44	0.35	___				
Taxes	0.30	0.34	___		======	======	====
				Total Cost / CWT EQ	**$10.96**	**$9.21**	___

Production costs can also be reduced by increasing production, if the cost of producing the additional output is less than your current average cost. In addition, some categories are related to one another. Example: low fertilizer costs may lead to high purchased feed costs.

Information in the low 20% column on Table 3 should be used when setting long term goals. It contains the costs of the 186 farms with the lowest cost of production per CWT EQ.

Chart 1

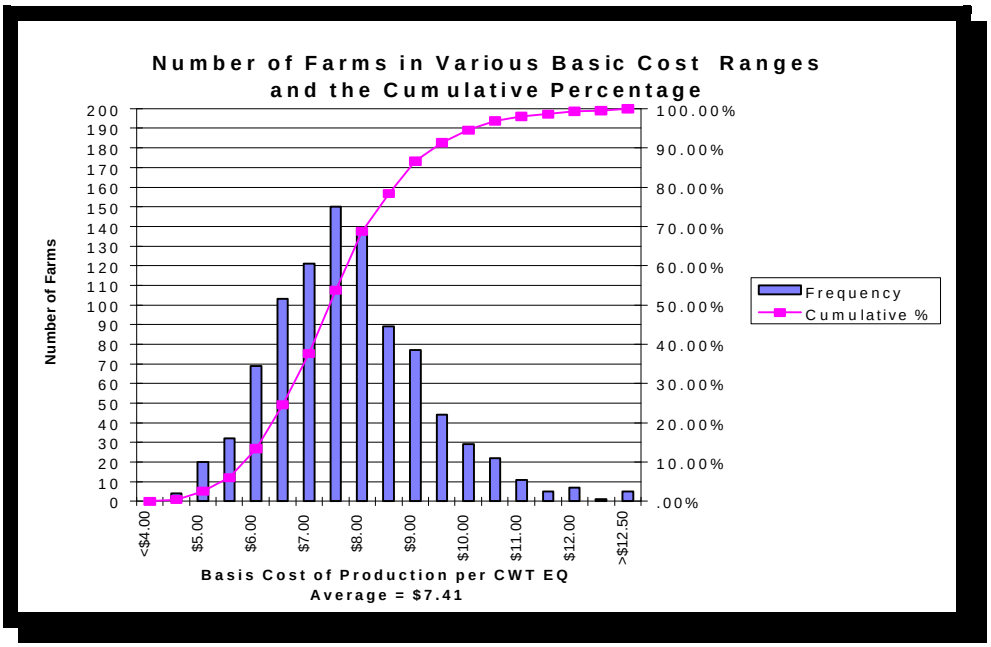
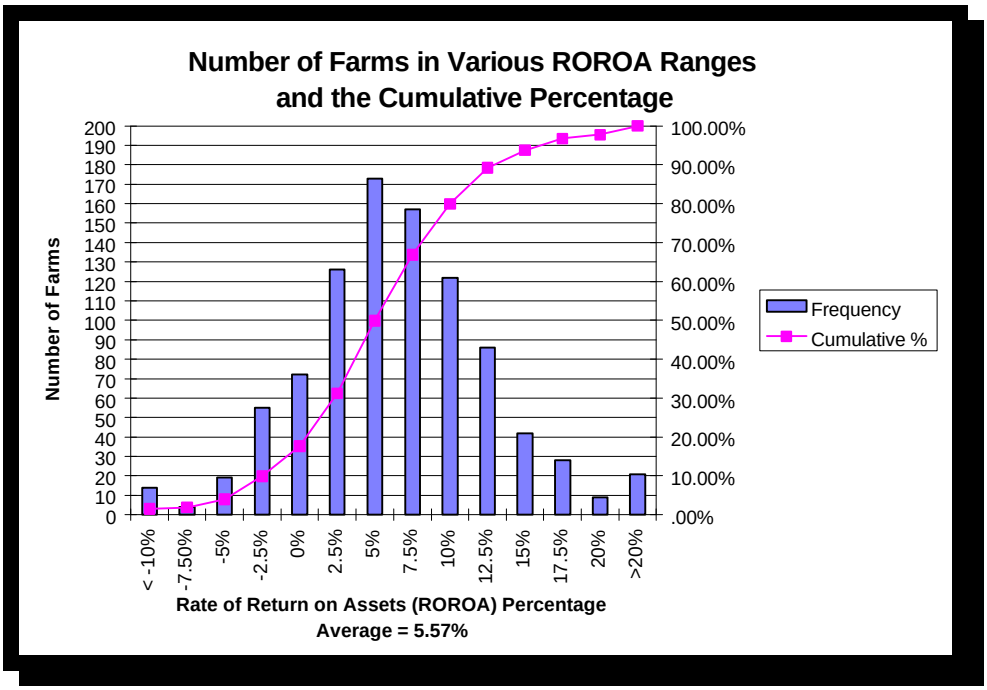


Chart 1 shows Chart 1 shows the Basic Cost of Production per CWT EQ in various ranges by $0.50 increments. Example: there are 150 farms in the range from $7.01 to $7.50.

Also, approximately 92% of the farms are producing milk for a Basic Cost of $9.50 or less.

Chart 2



The Rate of Return on Assets (ROROA) is considered one of the primary financial measures. The number of farms in various percent ranges and cumulative percentages are shown on Chart 2. Example: there are 173 farms with a ROROA between 2.51% and 5.00%. Also, 50 percent of the farms have a ROROA of greater than 5.00%.

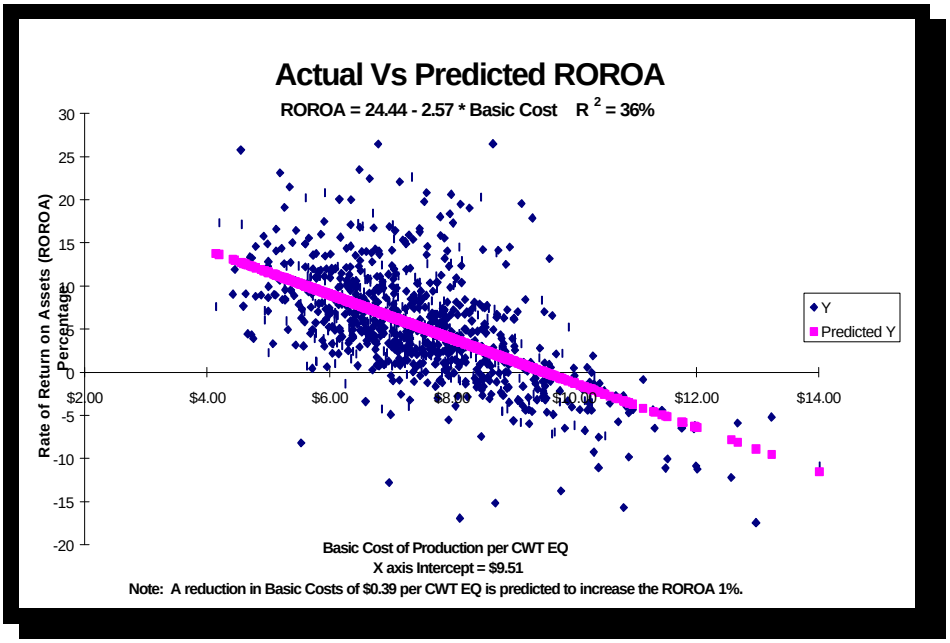
As an investor, a farm manager would like to increase the ROROA generated on the moneys invested in the farm business. The question is "What is the best method for doing this?" In earlier discussion it was stated that the "Net Profit Margin" times the "Asset Turnover Ratio" equaled the ROROA.

An analysis of the "Asset Turnover Ratio" on the 928 farms in this study revealed that the 20 percent of farms with the highest Asset Turnover Ratio had a higher ROROA than the average farm (10.32% versus 5.57%). This difference is significant at the 95% level with a R^2 = 24%. This predicts that increasing your "Total Farm Income" (more volume or output) will increase your ROROA.

The other part of the ROROA is the Net Profit Margin. In this study the 20 percent of farms with the highest Net Profit Margin had a higher ROROA than the average (12.43% versus 5.57%). This difference is significant at the 95% level with a R^2 = 56%. Also, it was found that "Total Allocated Costs per CWT EQ" is a predictor of Net Profit Margin (R^2 = 75%) and "Total Basic Cost of Production" is a predictor of "Total Allocated Costs" (R^2 = 93%). In this study the 20 percent of farms with the highest Net Profit Margin had a Basic Cost that was more than $3.00 per CWT EQ **less than** the Basic Cost on the lowest 20 percent ($9.26 - $6.17).

Chart 3 shows a plot of the actual ROROA and Basic Cost of Production per CWT EQ as the darker points and the predicted ROROA at a given Basic Cost as the lighter points.

Chart 3



The line formed by the lighter points intersects the X-axis at $9.51. This means that if your Basic Cost of Production per CWT EQ is $9.51 your predicted ROROA is 0.00%. To increase your ROROA you will need to decrease your Basic Costs because the slope of the prediction line is negative and common sense says that to increase the returns to your assets you will need to decrease costs.

The analysis also predicts how much you need to decrease your Basic Cost of Production per CWT EQ to increase your ROROA by 1%. The amount is $0.39. It predicts that you will need a Basic Cost of $5.61 to have a ROROA of 10%. Is that possible? According to this study, it is. In fact, 69 farms (approximately 7.5%) in this study have Basic Costs at or below $5.61 (Chart 1), however 20% of the farms have a ROROA of greater than 10%. Therefore, if your goal is a ROROA in excess of 10%, reducing Basic Costs is one way to get there.

Now that you know the two major factors (Basic Costs and Total Farm Income) affecting your ROROA you can concentrate your management efforts on them. Table 3 shows the breakdown of Basic Costs into various tax categories. Place your costs beside the costs of the farms in this study to determine which categories of cost need management attention. Then attend to them!

Additional Information

Tables 4-6 show results using different farm characteristics to sort the farms and the overall average for selected items. The tables also show averages for selected items for the lowest 20 percent of farms on that item sort, the middle 60 percent, and the highest 20 percent. We have added two variables this year, Margin Per Farm and ROROA. Margin per farm is the dollars of total labor and management (including family living) and total capital costs include interest paid on equity. As discussed earlier, ROROA is calculated by using the following formula: (NFIFO plus interest paid minus unpaid labor and management charges) divided by the average total farm assets.

Table 4

Study Farms Sorted by Basic Cost of Production per Hundredweight Equivalent (CWT EQ)

	Basic Cost of Production / CWT EQ	Total Allocated Costs / CWT EQ	Average No. of Cows	Crop and Pasture Acres Per Cow	Pounds Milk Sold per Cow	Margin per Farm	ROROA
Average	$7.41	$10.96	76	3.6	18,500	$93,041	5.57%
Low 20%	$5.66	$9.21	71	3.8	18,400	$119,571	9.36%
Mid 60%	$7.40	$10.98	81	3.5	18,600	$99,552	5.94%
High 20%	$9.51	$12.91	69	3.8	17,900	$47,047	-0.65%

Table 4 shows that the lowest 20 percent of farms, sorted on basic cost per CWT EQ, had an average basic cost of $5.66. The highest 20 percent of the farms had a basic cost of $9.51, a difference of $3.85 per CWT EQ. Margin per farm for the lowest 20% was $119,571 with an ROROA of 9.36%; the highest 20% was $47, 047 margin per farm and a negative .65% ROROA. The average milk sold per cow was 18,400 for the lowest cost producers and 17,900 for the highest cost producers.

Table 5

Study Farms Sorted by Milk Sold per Cow

	Basic Cost of Production / CWT EQ	Total Allocated Costs / CWT EQ	Average No. of Cows	Crop and Pasture Acres Per Cow	Pounds Milk Sold per Cow	Margin Per Farm	RORO A
Low 20%	$7.62	$11.22	67	3.7	13,915	$60,156	3.51%
Mid 60%	$7.42	$10.98	75	3.7	18,318	$90,100	5.30%
High 20%	$7.27	$10.77	90	3.5	22,188	$134,719	7.54%

Table 5 is sorted by pounds of milk sold per cow. The lowest 20 percent of farms averaged 13,915 pounds of milk sold per cow, had a margin per farm of $60, 156 and an ROROA of 3.51%. The highest 20 percent of farms averaged 22,188 pounds of milk sold per cow with a margin per farm of $134,719 and 7.54% ROROA.

Expenses per CWT EQ are sometimes thought to be negatively related to production per cow, i.e., that as production per cow increases, expenses per CWT EQ decrease. Statistical tests (correlation and regression analysis) showed no relationship between production per cow and basic expenses per CWT EQ on the 928 farms studied.

Table 6

Study Farms Sorted by Average Number of Cows per Farm

	Basic Cost of Production / CWT EQ	Total Allocated Costs / CWT EQ	Average No. of Cows	Crop and Pasture Acres Per Cow	Pounds Milk Sold per Cow	Margin Per Farm	RORO A
Low 20%	$7.67	$11.06	36	4.3	16,868	$37,410	1.88%
Mid 60%	$7.35	$10.78	62	3.9	18,570	$76,448	5.19%
High 20%	$7.42	$11.14	161	3.2	18,698	$198,275	7.16%

Table 6 sorts the farms by the number of cows in the herd. The lowest 20 percent of farms sorted by this method averaged 36 cows per farm, $37,410 margin per farm and 1.88% ROROA. The highest 20 percent averaged 161 cows per herd, a $198,275 margin per farm and a ROROA of 7.16%.

While the CWT EQ method described above is the best comparison method for most items, it may not be for purchased dairy feed. Purchased dairy cattle feed per hundredweight of milk sold may be an important measure as well. Table 7 shows ranges of purchased dairy cattle feed and the number of study farms in each range. The farms studied averaged $2.55 of purchased feed per hundredweight of milk sold. The lowest 20 percent of farms, sorted using purchased dairy cattle feed cost as the sort variable, had purchased feed cost of $1.23 per hundredweight of milk sold. The highest 20 percent had costs of $3.90. Fifty-seven percent of the farms had purchased dairy cattle feed costs of $2.50 or less per hundredweight of milk sold.

Table 7

Purchased Dairy Cattle Feed Costs per Hundredweight of Milk Sold

Dollars per Hundredweight	Number of Farms	Percent of Farms*
Less than $2.00	326	35
2.01 - 2.50	207	22
2.51 - 3.00	171	18
3.01 - 3.50	102	11
3.51 - 4.00	67	7
4.01 - 4.50	26	3
greater than 4.50	29	3

* Percent column may not add to 100 due to rounding.

Table 8

Range in Purchased Dairy Feed Costs

Dollars per Cow	Number of Farms	Percent of Farms*
Less than $200	86	9
201 - 300	135	14
301 - 400	187	20
401 - 500	188	20
501 - 600	146	16
601 - 700	94	10
701 - 800	48	5
greater than 800	44	5

* Percent column may not add to 100 due to rounding.

Summary

The farms studied were larger and had higher average production per cow than the Wisconsin average. Total income per cow averaged $2,896, of which $2,386 was milk income. In addition, 91 percent of total income was from the sale of products directly related to the dairy enterprise (milk, cull cows, and calves). Total allocated expenses per cow averaged $2,445, which left $451 per cow as a return to the farmer's (and family's) unpaid labor, management, and equity capital.

The largest single expense item—purchased feed—averaged $470 per cow and $2.55 per hundredweight of milk sold. This was the only expense item calculated both on a per hundredweight of milk sold and on a per CWT EQ basis. The CWT EQ unit was developed to account for all the dairy farm's income sources. The CWT EQ units produced on each farm were calculated by summing output from all the various income sources on the farm and dividing that value by the average 1995 U.S. milk price.

The total allocated expenses per CWT EQ averaged $10.96 and basic costs averaged $7.41 per CWT EQ. The business term equivalent to "basic costs" is the "cost of goods." Business individuals want to know their "cost of goods" per dollar of income. The basic costs or cost of goods per dollar of income averaged 58 cents (the $7.41 basic cost divided by the $12.86 average milk price in 1995). The other 42 cents, per dollar of income, is available for hiring labor, principal and interest payments, down payments or payment for asset purchases, and/or family living draw.

Is the 42 cent margin enough to cover all the needs listed above? The goal for this value is 45 cents per dollar of income. However, the individual farmer knows the answer the question "How much is needed?" better than these authors. Hence, individual farmers should calculate their costs to gain a better understanding of how they compare to the industry and to their goals.

Appendix: Cost of Producing Milk
per
Hundredweight Equivalent

Prepared by Gary Frank, UWEX - Madison

Work Sheet:		An Example Farm	Your Farm
1.	Total Schedule F Income (Schedule F, line 11)	$126,161	_____
2.	Form 4797 Income[1]	$ 12,143	_____
3.	Change[2] in Feed Inventory	-$ 4,127	_____
4.	Change[2] in Livestock Inventory	$ 10,500	_____
5.	Other	$0	_____
6.	Total Farm Income (On this worksheet, add lines 1 through 5.)	$144,677	_____
7.	Average Milk Price[3]	$ 12.86	_____
8.	Hundredweight Equivalents (CWT EQ) of Milk Produced (On this worksheet, divide line 6 by line 7)	11,250	_____
9.	Total Schedule F Expenses (Schedule F, line 35)	$122,521	_____
10.	Change[2] in Accounts Payable	$ 1,543	_____
11.	Change[2] in Prepaid Expenses	$ 1,200	_____
12.	Total Allocated Costs (On this worksheet, add lines 9 and 10, then subtract line 11)	$122,864	_____
13.	Total Interest Paid (Add Schedule F lines 23a and 23b)	$ 8,470	_____
14.	Wages and Benefits Paid (Only those reported on Schedule F; to obtain this value add Schedule F lines 17, 24, and 25)	$ 12,682	_____
15.	Depreciation Claimed (Schedule F line 16 minus Depr. claimed on livestock)	$ 15,346	_____
16.	Total Basic Costs (On this worksheet, line 12 minus lines 13, 14, and 15)	$ 86,366	_____
17.	Basic Cost per CWT EQ[4] (On this worksheet, line 16 divided by line 8)	$ 7.68	_____
18.	Margin in dollars per CWT EQ available to cover all other costs[5] (On this worksheet, line 7 minus line 17)	$ 5.18	_____
19.	Total $'s available for other costs (On this worksheet, line 18 times line 8)	$58,275	_____
20.	Total Allocated Costs / CWT EQ (On this worksheet, divide line 12 by line 8)	$ 10.92	_____
21.	Total $'s available to cover unallocated costs[6] (On this worksheet, (line 7 minus line 20) times line 8)	$21,825	_____

The footnotes are on the back of this page.

Footnotes

1 Form 4797 usually contains only income from the sale of culled raised dairy livestock. In those cases, simply enter the income reported. However, Form 4797 can contain the sale of purchased dairy livestock and the "one-time" sale of some other asset(s), such as an old plow. If your Form 4797 contains either of these items adjustments must be made.

In the case of the "one-time" sale, that income must be subtracted from the Total Form 4797 income before a value is entered. In the case where purchased breeding livestock are included, enter the net amount. This net will take into account the unrecovered basis that was claimed against this sale.

2 Change equals the ending amount minus the beginning amount. The best way to get this value is to ask yourself if there was any change in this item during the year in question. If the answer is "yes" then follow with the question, "how much?" This method avoids having to determine the absolute inventory level at the beginning and end of the year in question.

3 If you wish to compare your costs to the costs on other farms, use the U.S. average all milk price for the year in question. It was $13.74, $12.27, $13.15, $12.86, $13.03, and $12.86 (est.) in 1990 - 1995, respectively. Or you can divide your total milk income (before any deductions for hauling, marketing, etc.) by the number of hundredweight of milk you sold during the year to calculate the average milk price on your farm. However, then you can only accurately compare your costs this year to <u>your</u> costs in previous years.

4 The average Basic Cost on selected Wisconsin dairy farms was $7.54, $7.68, $7.11, and $7.41 in 1992-1995, respectively. Farmers should calculate this value each year to monitor changes in their basic production costs. This value is especially important if you are expanding, acquiring more debt, and/or paying additional labor. This value allows farm managers to compare their cost to previous years, other dairy businesses, and the price without regard to herd size, production level, debt position, and percent of total labor paid. See Managing the Farm Vol. 28 No. 1&2 for more information.

5 The "other" cost items are: interest (both that actually paid and the opportunity cost interest on your equity in the business), capital consumed (reduction in the value of your machinery, equipment, etc. caused by using it and/or by it becoming obsolete), labor and management paid, and the opportunity cost of unpaid labor and management. Any return above all these costs is an economic profit.

6 At this point, for many farm managers, the unallocated costs are for their (and their family's) labor and management plus a return to their equity capital. However, sometimes farm managers pay their family members (or themselves) some wages and benefits that are deductible on Schedule F. In those cases, don't expect this margin to be as large as when the return to all the farmer's (and family's) labor, management, and equity capital are imbedded in it.

In the example, the farm's margin available for unallocated costs is $21,825. However, if some or all of the amount on line 14 was paid to family members, this is <u>not</u> the return to the farmer's (and family's) labor, management, and equity capital. Then the return to their labor, management, and equity capital is the amount calculated above plus the wages and benefits paid to family members. In the example, if all the wages and benefits paid were to family members, the total return to their labor, management, and equity capital is $34,507 ($21,825 plus $12,682).

The views expressed are those of the author. We welcome your comments. We would appreciate your response if you get duplicate copies, need an address correction, wish to be removed from the mailing list, or know of others we should add to the mailing list. Send the mailing panel to Professor Philip Harris, Department of Agricultural Economics, 427 Lorch Street, University of Wisconsin-Madison, Madison, WI 53706. This publication is supported by Cooperative Extension, University of Wisconsin-Extension and by the Research Division, College of Agricultural and Life Sciences, University of Wisconsin-Madison. UW-Extension and UW-Madison provide equal opportunities in employment, admissions and programming.

Philip E. Harris, Editor
"Managing the Farm"

Department of Agricultural Economics
Philip E. Harris, Editor
Taylor Hall - 427 Lorch Street
University of Wisconsin-Madison
Madison, WI 53706-1503

Nonprofit Organization
U. S. POSTAGE
PAID
Madison, Wisconsin
Permit No. 658