

MILK PRODUCTION COSTS in 2008 On Selected WISONSIN DAIRY FARMS

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Introduction

The Basic Cost of Production increased in 2008 by \$0.35/cwt equivalent (CWT EQ) and by \$385/cow over 2007. Although the U.S. All Milk Price at \$18.32/cwt was \$0.79/cwt under the \$19.15/cwt price in 2007; it was the second highest on record. This continues the milk price volatility of recent years, especially since 1995.

The US All Milk Price (\$18.36) was more than the study farm's total economic cost of production (\$17.66); creating a gain of \$0.70/cwt. Total farm income averaged \$18.36/CWT EQ producing \$2.89/cwt equivalent of Net Farm Income. This is down from the 2007 return of \$3.75/CWT EQ however it is well above 2006 with a loss of \$1.22/CWT EQ which followed a \$2.55/CWT EQ gain in 2005. Although the All Milk Price of \$12.88/cwt in 2006 was less than the study farm's total economic cost of production of \$13.48/CWT EQ, the 2005 All Milk Price of \$15.13 exceeded total economic costs of \$14.37/CWT EQ by \$0.76/CWT EQ.

In this summary of 2008 financial records, 515 dairy farms averaging 158 cows and 22,212 lbs of milk sold per cow had a Basic Cost of production of \$11.59/CWT EQ on income of \$18.36 (U.S. average per hundredweight milk price in 2008). The total economic cost was \$17.66 per CWT EQ producing a gain of \$0.70.

During 2007, 544 dairy farms averaging 148 cows and producing 21,958 lbs of milk sold per cow had a Basic Cost of \$11.24 per CWT EQ on income of \$19.15 (US average per cwt milk price in 2007). The total economic cost for fiscal year 2007 was \$17.73 per CWT EQ.

In the study of 2006 records, 594 farms milking an average of 138 cows producing 22,147 lbs milk/cow produced a Basic Cost of production of \$8.29/CWT EQ as compared to an All Milk Price of \$12.88 and a total income/Cwt EQ of \$12.92. The total economic cost of production for 2006 was \$13.50/CWT EQ.

Total farm numbers in the AgFA2 data set summarized have declined each of the last four years from 672 farms in 2005, 594 in 2006, 544 in 2007 to 515 farms summarized in 2008.

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Data Source

Lakeshore Farm Management Association, Fox Valley Management Association, independent consultants, UW-Extension Agricultural Agents and Wisconsin Technical College System Instructors originally collected this data. Personnel 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@) and QuickBooks@. The Agricultural Financial Advisor (AgFA@)² data set was used for this study. AgFA@ is a sample of Wisconsin dairy farms from which financial and production data are collected annually.

Cost of Production

Using Table 1 you can compare your cost of production figures to those in the study. The “per head” or the “per CWT EQ” column will help to identify categories of your expenses that are above average.³ For instance, suppose your fuel and oil costs are \$110 per cow. Compare your farm’s cost to the same item in Table 1. Is your cost competitive with your data base peers? If your farm’s cost is NOT at or below the average you should find out why this has occurred and do what you can to decrease the costs in that category.

Table 1

Results-Per Whole Farm, Per Cow, Per CWT EQ

Table 1 shows the average cost of production in 2008 using three different report bases. They are Whole Farm (Economic), per Head and per CWT EQ. The costs are broken down into four different categories. They are: basic costs (similar to the Cost of Goods in non-farm accounting), interest costs, labor costs, and depreciation and equity costs.

Table 1 shows a basic cost of \$3,233 per cow and \$11.59 per CWT EQ. The total income per cow was \$5,123 in 2008. Table 1 shows an economic gain averaging \$30,667 per farm in 2008 or a gain of \$194 per cow. This means that the average farm was able to contribute to the farm manager’s unpaid labor and management or the equity capital even if one, the other or both did not receive a market competitive rate in 2008. The cost assigned to the farm manager’s unpaid labor and management was \$46,083 and the opportunity cost of the owner’s equity capital was \$48,092. These are non-cash costs however, cash is typically withdrawn for family living purposes and these costs are not included in farm expenses.

² AgFA@ (Agricultural Financial Advisor) – <http://cdp.wisc.edu>. AgFA@ is an interactive/real time database for collecting and analyzing data.

³ Frank, Gary G. “Calculating Your Milk Production Costs and Using the Results to Manage Your Expenses.” August 1996. Available on the Center for Dairy Profitability website: <http://cdp.wisc.edu>.

Table 1 also shows the average costs per CWT EQ for selected expense categories that closely match the expense categories on the Schedule F income tax form. It also shows opportunity cost for the unpaid labor and management and interest on equity capital.

Table 1 records the average per cow costs for all farms summarized. The purchased feed per cow increased in 2008 (\$1,201) over 2007 (\$942) by \$259 per cow. Purchased feed costs per cow were \$747, \$843, \$891, \$695, \$638 and \$648, in 2006, 2005, 2004, 2003, 2002 and 2001 respectively. Supplies declined to \$119 per cow in 2008 after exhibiting a variable but significant increase at \$120 per cow in 2007, \$106 per cow in 2006 and \$112 per cow in 2005. Major cost increases in 2008 were Feed Purchased at \$259 and Gasoline, Fuel and Oil increasing by \$43 per cow, ranking number 1 and 2 respectively.

Interest costs per cow declined in 2008 reversing the trend over recent years. Interest paid per cow was \$210, \$236, \$222, \$185, \$175 and \$185 in 2008, 2007, 2006, 2005, 2004 and 2003 respectively. Both lower interest rates and reduced debt per cow likely lead to the decline.

Paid labor costs increased once again to \$513 per cow in 2008. This is a \$32.00 per cow increase over 2007 although 2007 labor costs were down \$1.86 per cow from 2006. Labor costs declined for dependents in 2008 as it had in 2006 and 2005 with 2007 documenting a slight increase. The trend previous to 2007 may be explained by the increase in the number of farms milking more cows with a higher percentage of paid versus unpaid family labor.

Check Table 1 values against your costs to see if yours are competitive. You can use the “per Cow” or the “per CWT EQ column from Table 1 to help you identify categories of your expenses that are above average. For instance, suppose your Purchased feed Costs are \$1,100 per cow. Is this OK? How do you know? Use the “per Cow” column in Table 1 or select the herd size representative of your farm from Table 4 to help you make the judgment call. If your farm’s cost is NOT below the average, you may want to find out why this is and do what you can to decrease cost in this area and/or increase production efficiency.

Table 1
Cost of Production, 2008
Report Basis: Whole Farm, per Head, Per Hundredweight Equivalent

Income	<u>2008</u> Economic	<u>2008</u> per Head	<u>2008</u> per CWT EQ
Total Income	811,828.65	5,122.64	18.36
Expenses	<u>2008</u> Economic	<u>2008</u> per Head	<u>2008</u> per CWT EQ
Basic Cost			
Cost of Items for Resale	62.86	0.40	0.00
Breeding Fees	9,874.11	62.31	0.22
Car and Truck Expenses	2,643.22	16.68	0.06
Crop Chemicals	8,819.75	55.65	0.20
Conservation Expenses	15.77	0.10	0.00
Custom Heifer Raising Expenses	3,327.31	21.00	0.08
Custom Hire (Machine Work)	24,080.78	151.95	0.54
Feed Purchase	190,301.11	1,200.80	4.30
Fertilizer and Lime	17,290.31	109.10	0.39
Freight and Trucking	8,710.94	54.97	0.20
Gasoline, Fuel, and Oil	28,880.07	182.23	0.65
Farm Insurance	8,481.11	53.52	0.19
Rent/Lease Equipment	2,887.18	18.22	0.07
Rent/Lease Other	22,592.66	142.56	0.51
Repairs and Maintenance	3,533.03	22.29	0.08
Building and Fence Repairs	12,263.32	77.38	0.28
Machinery Repairs	21,832.93	137.77	0.49
Seeds and Plants Purchased	15,888.51	100.26	0.36
Storage and Warehousing	76.71	0.48	0.00
Supplies Purchased	18,811.86	118.70	0.43
Taxes - Other	5,342.13	33.71	0.12
Taxes - Payroll	422.22	2.66	0.01
Utilities	15,695.56	99.04	0.35
Veterinary Fees and Medicine	21,930.58	138.38	0.50
Other Farm Expenses	7,354.95	46.41	0.17
Marketing & Hedging	7,160.65	45.18	0.16
Other Crop Expenses	6,597.40	41.63	0.15
Other Livestock Expenses	32,204.96	203.21	0.73
- Change in Prepaid Expenses	2,833.51	17.88	0.06
Change in Accounts Payable	1,495.46	9.44	0.03
Depreciation on Purchased Breeding Livestock	11,029.86	69.60	0.25
Total Basic Cost	512,440.82	3,233.50	11.59

Table 1, Con't
Cost of Production, 2008
Report Basis: Whole Farm, per Head, Per Hundredweight Equivalent

Interest Cost

Mortgage Interest	14,224.37	89.76	0.32
Other Interest	18,989.43	119.82	0.43
Total Interest Cost	33,213.80	209.58	0.75

Labor Cost

Employee Benefits - Dependents	3,870.85	24.43	0.09
Employee Benefits - Non-Dependents	12,053.37	76.06	0.27
Labor Hired - Dependents	5,235.33	33.03	0.12
Labor Hired - Non-Dependents	60,165.71	379.65	1.36
Pension and Profit-Sharing Plans - Non-Dependents	38.86	0.25	0.00
Value of Unpaid Labor & Management	46,083.26	290.79	1.04
Total Labor Cost	127,447.38	804.19	2.88

Depreciation & Equity Cost

Machinery, Equipment, Building Depreciation	59,967.37	378.39	1.36
Interest on Equity Capital	48,092.43	303.46	1.09
Total Depreciation & Equity Cost	108,059.80	681.86	2.44

Total Expenses	781,161.80	4,929.13	17.66
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Total Income - Total Expenses	30,666.85	193.51	0.69
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Table 2 shows the average Net Farm Income in 2008 was \$805 per cow a decline from \$951 in 2007. Net Farm Income per cow and economic return were both positive in 2008 and, the average herd experienced an economic gain in 2008 as in 2007. Net Farm Income is total farm income minus all farm expenses except the Value of Unpaid Labor and Management and, Interest on Equity Capital. After charges for Unpaid Labor and Management and for Equity Capital is deducted from 2008 Net Farm Income, an economic gain of \$211 per cow results.

Table 2
Net Farm Income in 2008

Net Farm Income from Operations (NFIFO Summary)	Per Farm	Per Head	Per CWT
Total Allocated Costs	686,986	4,335	15.54
Net Farm Income From Operations (NFIFO)	124,843	788	2.82
Gain (Loss) on Sale of All Farm Capital Assets	2,781	17.55	0.06
Net Farm Income (NFI)	127,623	805	2.89

Net Farm Income is sometimes used as a proxy for the dollars a farm manager has available to pay family living expenses and income and Social Security taxes. This is a fine proxy, but it is not very accurate because some of the incomes and expenses used to calculate Net Farm Income are non-cash (depreciation and others). Also some wages and benefits deducted as business expense are paid to family members. In addition, farm managers have other demands on the cash the farm operation generates such as debt repayment and down payments on new capital purchases, so the money available for family living usually does not equal Net Farm Income.

Table 3
Milk Production Costs per Farm in 2008

Range in Herd Size	<=50 Cows	51 to 75	76 to 100	101 to 150	151 to 250	> 250 Cows
Number of Farms	79	141	95	69	59	71
Cows per Farm	40	62	88	126	193	581
Total Number of Cows	3,197	8,802	8,365	8,665	11,361	41,226
Milk Sold per Cow (lbs)	18,242	20,499	20,203	20,901	21,582	23,742
Dairy Livestock Sales per Cow	\$325	\$294	\$297	\$237	\$221	\$189
Crop Acres per Cow	4.81	4.13	3.90	3.24	2.74	1.55
Total Crop Acres Farmed	195	258	343	407	528	900
Cost of Items for Resale	29.42	150.43	0.00	128.07	0.00	0.00
Breeding Fees	2,078.87	4,201.78	5,139.38	7,861.03	12,308.41	36,154.42
Car and Truck Expenses	1,791.89	2,065.17	2,487.27	2,678.78	2,393.12	5,157.58
Chemicals	3,435.24	4,450.27	7,976.32	7,881.87	11,574.66	23,149.23
Custom Heifer Raising Expenses	0.00	188.13	484.86	607.71	708.54	21,932.93
Custom Hire (Machine Work)	2,822.76	10,414.31	12,088.96	15,633.88	27,956.20	96,050.30
Feed Purchased	30,516.18	52,449.47	75,044.41	119,066.49	190,434.95	866,899.56
Fertilizer and Lime	6,855.50	12,110.17	15,989.55	17,268.13	20,550.76	38,322.04
Freight and Trucking	2,543.55	3,669.32	4,220.20	5,538.99	8,440.25	34,966.55
Gasoline, Fuel, and Oil	8,574.33	13,653.89	19,594.67	26,413.41	35,788.66	90,987.46
Farm Insurance	3,469.08	5,196.66	6,730.37	8,983.90	12,036.69	19,519.25
Rent/Lease Equipment	293.89	923.11	696.96	1,754.65	2,262.71	14,263.96
Rent/Lease Other	3,796.00	8,039.22	14,000.05	17,951.90	31,976.36	80,724.54
Repairs and Maintenance	1,643.28	3,017.91	2,583.32	3,769.42	2,872.39	8,298.41
Building and Fence Repairs	1,736.06	4,296.60	7,321.48	9,729.62	11,748.73	49,414.46
Machinery Repairs	6,293.33	10,455.11	14,983.62	21,581.10	29,430.46	64,842.68
Seeds and Plants Purchased	5,625.42	9,409.21	13,079.41	15,160.67	18,675.98	42,346.44
Supplies Purchased	6,355.02	10,079.56	13,639.84	17,469.43	25,042.98	53,099.59
Taxes	2,732.99	3,397.01	4,094.41	5,991.16	6,341.95	15,378.17
Utilities	5,403.30	7,594.25	10,762.72	14,541.61	19,517.37	47,813.30
Veterinary Fees and Medicine	4,021.38	7,845.21	10,848.02	15,025.61	24,739.19	89,160.48
Other Farm Expenses	4,672.05	9,792.82	17,743.33	25,416.45	44,079.31	225,733.10
Marketing & Hedging	1,387.35	2,281.23	3,180.82	4,551.93	6,808.31	31,489.79
- Change in Prepaid Expenses	1,574.30	1,233.17	1,197.73	2,568.99	4,399.11	8,600.23
Change in Accounts Payable	488.80	665.01	1,974.94	1,454.05	(2,244.14)	6,232.97
Depreciation on Purchased Breeding Livestock	1,621.13	3,554.81	4,370.35	8,029.58	15,302.56	44,704.32
Basic Costs	109,761.10	191,133.84	270,232.99	377,058.43	563,145.51	2015,241.75
Mortgage Interest	2,906.86	5,830.23	7,356.65	13,246.75	19,845.20	48,824.24
Other Interest	3,270.48	5,049.95	8,081.66	14,931.86	17,528.25	84,067.70
SST & Emp Bens (Dep)	4,553.96	3,964.73	4,383.55	3,697.48	3,735.88	2,573.49
SST & Emp Bens (Non-dep)	994.61	4,536.67	5,641.88	8,573.52	12,191.90	51,582.80
Labor Hired (Dependents)	3,612.41	4,569.33	6,775.81	4,575.03	6,138.97	6,182.58
Labor Hired (Non-dep)	2,689.63	11,437.33	20,245.76	43,039.10	72,186.97	281,804.54
Dpr - Mach, equip, build	17,690.49	29,580.50	37,756.22	55,276.73	67,770.28	195,735.12
Total Allocated Costs	145,479.54	256,102.57	360,474.53	520,398.90	762,542.96	2,686,012.22
Total Farm Incomes	186,619.02	317,282.17	450,546.57	633,169.57	940,946.15	3,044,937.05
NFIFO*	41,139.48	61,179.60	90,072.04	112,770.67	178,403.19	358,924.83
(loss) on sale of all Farm Capital Assets	917.54	1,699.25	2,100.97	666.50	3,201.21	9,653.94
NFI	42,057.02	62,878.85	92,173.01	113,437.18	181,604.40	368,578.77
NFI + Dependents Labor and Benefits	50,223.39	71,412.91	103,332.37	121,709.68	191,479.25	377,334.84

*Net Farm Income from Operations

Table 3

Results – Per Farm

You should be very careful when comparing your farm to Table 3. Even though the table is broken down into different herd size categories the herd size range in each category is wide. NOTE: Tables 4, 5 and 6 can be used without this caution because they are generated with standardized data on a per cow, CWT EQ or Percent of Gross revenue report basis.

Table 3 shows the per farm cost of production averages in six herd size categories. To assist in your understanding of the entire table, the “Range in Herd Size-76 to 100” column is used as an example.

There were 95 herds in the data set that had more than 76 cows and less than 101 cows. Those herds averaged 88 cows per farm and sold an average of 20,203 pounds of milk per cow. They had an average of 3.9 crop acres per cow and farmed 343 acres of cropland.

The average amount of purchased feed was \$75,044 per farm. In addition, they paid \$7,976 for Crop Chemicals, \$15,990 for Fertilizer & lime, \$24,888 for Repairs and \$10,848 for Vet & Medicine expense. All expenses trended higher in 2008 except Custom Hire, Fertilizer and Lime, Seeds and Plants Purchased, Depreciation on Purchased Livestock, Other Interest, Dependant Benefits and Paid Labor to Dependents which were lower than 2007 costs. Then purchased feed was \$62,258 per farm, \$8,923 for crop chemicals, \$16,832 for fertilizer, \$20,561 for repairs and \$10,429 for vet & medicine expense.

In 2008 there was an increase in Prepaid Expenses of \$1,198 as well as an increase of \$1,975 in Accounts Payable. Other interest declined in 2008 to \$8,082 per farm compared to \$10,820 in 2007.

Total Basic Costs for the 76-100 cow herd size farms was \$270,233 in 2008, \$238,570 in 2007, \$204,923 in 2006; \$214,420 2005 and \$204,847 per farm in 2004.

In addition to Basic Costs the 2008 group of farms paid \$27,022 in labor (\$6,776 to Dependents and \$20,246 to Non-dependents). This is approximately \$1748 more than in 2007, \$316 more than 2006 and \$532 more than in 2005.

Social Security Taxes plus Benefits totaled \$10,026 (\$4384 for Dependents and \$5642 for Non-dependents) in 2008 versus \$10,305 in 2007, \$10,082 in 2006 and \$8,748 in 2005. This marks a reversal of an increasing trend in the benefits portion of an agricultural employee’s benefit package with the expense leveling out. In our sample, it increased 2.2 percent from 2006 to 2007 but decreased 2.8% in 2008. There was also \$15,439 (\$7,357 plus \$8,082) of interest expenses. This is a decrease of approximately \$1,950 from 2007. In 2008, \$42,126 of Depreciation was claimed. Some of that depreciation (\$4,370) was taken on purchased livestock.

The Total Allocated Costs are \$360,475 in 2008 versus \$325,908 in 2007, \$350,442 per farm in 2006 and \$356,330 in 2005. The Total Income per farm was \$450,547 in 2008, \$421,210 in 2007 and (\$19,387) and \$5,473 in 2006 and 2005 respectively. The Net Farm Income from Operations (NFIFO) in 2008 was \$90,072 while 2007 was \$95,302 compared to \$45,737 in 2006 and \$69,403 in 2005. The total return to the owner-operator-manger’s (and unpaid family’s) labor, management and

equity capital is the last line in Table 3 (\$103,332). It has the amount paid to dependents added to the NFI.

When comparing NFIFO in 2008 to those in 2007, all farm size categories had substantial decreases, most in the 15 percent range. One exception was those herds in the 151-250 cow herd size that experienced a 3.2% increase in NFIFO. However the largest farms, those in the herd size categories in excess of 250 cows had a decline in NFIFO of over 25 percent or in absolute terms, \$119,420.

Table 4
Milk Production Costs per Cow in 2007

Range in Herd Size	<=50 Cows	51 to 75	76 to 100	101 to 150	151 to 250	> 250 Cows
Number of Farms	79	141	95	69	59	71
Cows per Farm	40	62	88	126	193	581
Total Number of Cows	3,197	8,802	8,365	8,665	11,361	41,226
Milk Sold per Cow (lbs)	18,242	20,499	20,203	20,901	21,582	23,742
Dairy Livestock Sales per Cow	\$325	\$294	\$297	\$237	\$221	\$189
Crop Acres per Cow	4.81	4.13	3.90	3.24	2.74	1.55
Total Crop Acres Farmed	195	258	343	407	528	900
Cost of Items for Resale	0.73	2.41	0.00	1.02	0.00	0.00
Breeding Fees	51.37	67.31	58.37	62.60	63.92	62.27
Car and Truck Expenses	44.28	33.08	28.25	21.33	12.43	8.88
Chemicals	84.88	71.29	90.59	62.76	60.11	39.87
Custom Heifer Raising Expenses	0.00	3.01	5.51	4.84	3.68	37.77
Custom Hire (Machine Work)	69.75	166.82	137.30	124.49	145.18	165.42
Feed Purchased	754.02	840.16	852.31	948.10	988.98	1,492.98
Fertilizer and Lime	169.39	193.99	181.60	137.50	106.73	66.00
Freight and Trucking	62.85	58.78	47.93	44.11	43.83	60.22
Gasoline, Fuel, and Oil	211.86	218.72	222.54	210.32	185.86	156.70
Farm Insurance	85.72	83.24	76.44	71.54	62.51	33.62
Rent/Lease Equipment	7.26	14.79	7.92	13.97	11.75	24.57
Rent/Lease Other	93.80	128.78	159.00	142.95	166.06	139.02
Repairs and Maintenance	40.60	48.34	29.34	30.02	14.92	14.29
Building and Fence Repairs	42.90	68.83	83.15	77.47	61.01	85.10
Machinery Repairs	155.50	167.48	170.17	171.85	152.84	111.67
Seeds and Plants Purchased	139.00	150.72	148.55	120.72	96.99	72.93
Supplies Purchased	157.03	161.46	154.91	139.11	130.05	91.45
Taxes	67.53	54.42	46.50	47.71	32.94	26.48
Utilities	133.51	121.65	122.24	115.79	101.36	82.34
Veterinary Fees and Medicine	99.36	125.67	123.21	119.65	128.48	153.55
Other Farm Expenses	115.44	156.87	201.52	202.39	228.91	388.76
Marketing & Hedging	34.28	36.54	36.13	36.25	35.36	54.23
- Change in Prepaid Expenses	38.90	19.75	13.60	20.46	22.85	14.81
Change in Accounts Payable	12.08	10.65	22.43	11.58	(11.65)	10.73
Depreciation on Purchased Breeding Livestock	40.06	56.94	49.64	63.94	79.47	76.99
Basic Costs	2,712.08	3,061.69	3,069.14	3,002.44	2,924.56	3,470.67
Mortgage Interest	71.83	93.39	83.55	105.48	103.06	84.09
Other Interest	80.81	80.89	91.79	118.90	91.03	144.78
SST & Emp Bens (Dep)	112.52	63.51	49.79	29.44	19.40	4.43
SST & Emp Bens (Non-dep)	24.58	72.67	64.08	68.27	63.32	88.84
Labor Hired (Dependents)	89.26	73.19	76.96	36.43	31.88	10.65
Labor Hired (Non-dep)	66.46	183.21	229.94	342.71	374.89	485.33
Dpr - Mach, equip, build	437.11	473.84	428.81	440.16	351.95	337.10
Total Allocated Costs	3,594.65	4,102.39	4,094.05	4,143.83	3,960.08	4,625.88
Total Farm Incomes	4,611.16	5,082.40	5,117.03	5,041.80	4,886.57	5,244.02
NFIFO*	1,016.51	980.01	1,022.98	897.97	926.49	618.14
Gain (loss) on sale of all Farm Capital Assets	22.67	27.22	23.86	5.31	16.62	16.63
NFI	1,039.19	1,007.23	1,046.84	903.28	943.12	634.77

*Net Farm Income from Operations

Table 4

Results – Per Cow

Table 4 shows per cow averages for six herd size categories for 2008. The 71 herds in the >250 cow category have more than three times the number of cows per herd than in the 151 – 250 cow category, almost five times the number cows per herd in the 101 – 150 cow category and just under seven times the number of cows per herd in the 76-100 cow grouping.

Table 4 also indicates that the larger herds (based on cow numbers) have fewer crop acres per cow and lower taxes per cow. However, larger farms have higher Purchased Feed costs, \$1,493 versus \$754 for the smallest herd six categories. Larger farms cost per cow was higher for Custom Heifer Raising, Rent/Lease Equipment, Building & Fence repairs, Veterinary Fees and Medicine, Other Farm Expenses, Other Interest and Hired Labor.

All herd size categories recorded increases in Prepaid Expenses. Only the 51 -75 and 101 – 150 cow categories showed declines in Accounts Payable.

Basic Cost in the largest herd size category exceeded the Basic Cost in the smallest category by \$759 per cow (\$3,471 vs. \$2,712). This amount appeared to be \$606 in 2007. The 2008 difference is largely due to Purchased Feed cost, Hired Labor, Custom Heifer Raising and Other Farm Expenses. Other Interest paid per cow increases steadily from the smallest to largest herd summary category. The larger herds filed lower costs per cow in the Breeding Fees, Car & Truck Expense, Chemicals, Fertilizer & Lime, Gasoline, Fuel & Oil, Farm Insurance, Machinery Repair, Seeds & Plants Purchased, Supplies Purchased, Taxes, Utilities, SST & Employee Benefits for Dependents and Depreciation- Machinery, equipment and buildings categories. The <50 cow per herd category registered the highest per cow expense for Freight and Trucking followed by the largest herd category. The NFIFO between the largest and smallest herd categories was \$399 per cow in favor of the small herd category.

Total Allocated Costs per cow are \$1031 (\$4,626 versus \$3,595) higher in the largest farm size category than the <50 cow group. The larger herds also generated, on average, \$633 more Total Income per cow as compared to the smallest herds.

Basic Cost of Production per Hundredweight Equivalent

Cost of Production per Unit Calculation Method Used

There are three commonly used methods to calculate cost of production per unit produced. They are “Cost per Unit of Primary Product Sold”, “Cost per Unit of Equivalent Production”, and “Residual Cost per Unit of Primary Product Sold”. All three methods yield the same values if the production process has only a single product. However, if the production process has joint products the results can be quite different. Dairy farms typically produce several products in addition to milk including cull cows and calves, cooperative dividends, government payments, tax credits and crop-related government payments. Therefore, knowing the cost of production per unit calculation method used is essential to interpretation of the results.

Each method of calculating the cost of production per unit has advantages and disadvantages.⁵ This study uses the “Cost per Unit of Equivalent Production” method to calculate the cost of producing milk. It was chosen because using this method allows the direct comparison of costs, total as well as any individual expense category, to the milk price (U. S. All Milk Price). When comparing different farm’s COP using CWT EQ, the high cost producer is always the low margin producer and the low cost producer is always the high margin producer if the same milk price is use, i.e. the U. S. All Milk Price.

“Total Allocated Expenses” are Total Expenses minus the value of unpaid labor, management and equity. “Basic Costs” are Total Allocated Expenses minus interest paid, and all wages and benefits paid and, non livestock depreciation expenses. Basic Cost is a useful measure when comparing one farm to another because it is not influenced by milk composition, other premiums, farm debt structure and the amount of paid versus unpaid labor or depreciation claimed.

An Average Basic Cost of \$11.59 in 2008 per CWT EQ was calculated by summing total Basic Costs on all farms and dividing by the number of CWT EQ produced. 81% of farms had a Basic Cost of \$12.00 per CWT EQ or less, an increase from the 74% in 2007. This is a reversal from 2004-2007 which recorded declining percentages. Table 7 lists selected ranges of Basic Costs. It shows the number and percent of farms in each range.

The \$11.59 average Basic Cost means that the average farmer in the study had a \$6.77 (The U.S. average milk price in 2008 of \$18.36 minus basic expenses of \$11.59 per CWT EQ) of income available per CWT EQ to use for other costs; versus \$7.91 in 2007. Other costs are items such as hired labor, scheduled principal and interest payments, a down payment when purchasing assets and/or family living draw.

Table 5
Milk Production Costs per CWT EQ in 2008

Range in Herd Size	<=50 Cows	51 to 75	76 to 100	101 to 150	151 to 250	> 250 Cows
Number of Farms	79	141	95	69	59	71
Cows per Farm	40	62	88	126	193	581
Total Number of Cows	3,197	8,802	8,365	8,665	11,361	41,226
Milk Sold per Cow (lbs)	18,242	20,499	20,203	20,901	21,582	23,742
Dairy Livestock Sales per Cow	\$325	\$294	\$297	\$237	\$221	\$189
Crop Acres per Cow	4.81	4.13	3.90	3.24	2.74	1.55
Total Crop Acres Farmed	195	258	343	407	528	900
Cost of Items for Resale	0.00	0.01	0.00	0.00	0.00	0.00
Breeding Fees	0.20	0.24	0.21	0.23	0.24	0.22
Car and Truck Expenses	0.18	0.12	0.10	0.08	0.05	0.03
Chemicals	0.34	0.26	0.32	0.23	0.23	0.14
Custom Heifer Raising Expenses	0.00	0.01	0.02	0.02	0.01	0.13
Custom Hire (Machine Work)	0.28	0.60	0.49	0.45	0.54	0.58
Feed Purchased	3.00	3.03	3.05	3.45	3.71	5.22
Fertilizer and Lime	0.67	0.70	0.65	0.50	0.40	0.23
Freight and Trucking	0.25	0.21	0.17	0.16	0.16	0.21
Gasoline, Fuel, and Oil	0.84	0.79	0.80	0.77	0.70	0.55
Farm Insurance	0.34	0.30	0.27	0.26	0.23	0.12
Rent/Lease Equipment	0.03	0.05	0.03	0.05	0.04	0.09
Rent/Lease Other	0.37	0.46	0.57	0.52	0.62	0.49
Repairs and Maintenance	0.16	0.17	0.11	0.11	0.06	0.05
Building and Fence Repairs	0.17	0.25	0.30	0.28	0.23	0.30
Machinery Repairs	0.62	0.60	0.61	0.63	0.57	0.39
Seeds and Plants Purchased	0.55	0.54	0.53	0.44	0.36	0.26
Supplies Purchased	0.62	0.58	0.56	0.51	0.49	0.32
Taxes	0.27	0.20	0.17	0.17	0.12	0.09
Utilities	0.53	0.44	0.44	0.42	0.38	0.29
Veterinary Fees and Medicine	0.40	0.45	0.44	0.44	0.48	0.54
Other Farm Expenses	0.46	0.57	0.72	0.74	0.86	1.36
Marketing & Hedging	0.14	0.13	0.13	0.13	0.13	0.19
- Change in Prepaid Expenses	0.15	0.07	0.05	0.07	0.09	0.05
Change in Accounts Payable	0.05	0.04	0.08	0.04	(0.04)	0.04
Gain (loss) on Purchased Breeding Livestock	0.16	0.21	0.18	0.23	0.30	0.27
Basic Costs	10.79	11.05	11.00	10.92	10.98	12.14
Mortgage Interest	0.29	0.34	0.30	0.38	0.39	0.29
Other Interest	0.32	0.29	0.33	0.43	0.34	0.51
SST & Emp Bens (Dep)	0.45	0.23	0.18	0.11	0.07	0.02
SST & Emp Bens (Non-dep)	0.10	0.26	0.23	0.25	0.24	0.31
Labor Hired (Dependents)	0.36	0.26	0.28	0.13	0.12	0.04
Labor Hired (Non-dep)	0.26	0.66	0.82	1.25	1.41	1.70
Dpr - Mach, equip, build	1.74	1.71	1.54	1.60	1.32	1.18
Total Allocated Costs	14.30	14.80	14.67	15.07	14.86	16.18
Total Farm Incomes	18.34	18.34	18.34	18.34	18.34	18.34
NFIFO*	4.04	3.54	3.67	3.27	3.48	2.16
(loss) on sale of all Farm Capital Assets	0.09	0.10	0.09	0.02	0.06	0.06
NFI	4.13	3.63	3.75	3.29	3.54	2.22

*Net Farm Income from Operations

Table 5

Results – Per CWT EQ

Table 5 records the cost of milk per CWT EQ for six herd size ranges. Purchased feed cost increases by \$2.22 (\$3.00 versus \$5.22) per CWT EQ from the smallest to the largest herd size category. This is offset by lower expenditures on Car & Truck Expense (-\$0.15), Chemical (-\$0.20), Fertilizer & Lime (-\$0.44), Gasoline, Fuel & Oil (-\$0.29), Farm Insurance (-\$0.22), Repairs & Maintenance(-\$0.11), Machinery Repairs (-\$0.23), Seeds & Plants Purchased (-\$0.29), Taxes (-\$0.18), Utilities (-\$0.24), Employee Benefits (-\$0.22) and Depreciation – machinery, equipment, buildings (-\$0.56) for a total of -\$3.13 per CWT EQ for the large herd category. Because little unpaid family labor is utilized on larger farms, their Hired labor expense was \$1.12/CWT EQ higher than herds in the smallest category.

Vet & Medicine cost are approximately 35% higher per CWT EQ for large herds than herds in the 76-100 cow range. Other Expenses increase by \$0.93 per CWT EQ from the smallest to the largest herd sizes summarized. A portion of this may be the cost of estrus synchronization programs and/or rBST.

The “<50- cow” farms record the lowest Basic Costs of \$10.79 per CWT EQ. The range in Basic Cost per CWT EQ among farm size groups is \$1.35 versus \$1.22 in 2007, \$0.35 in 2006 and \$0.01 in 2005. From lowest to highest Livestock Depreciation is \$0.16 per CWT EQ in the smallest herd size group and \$0.30 in the “151-250” herd size category.

The “<50 cow” herd size range turned in the highest NFIFO per CWT EQ in 2008 at \$4.04. In 2007 NFIFO was \$4.88, 2006 was \$1.91 and in 2005, \$2.92. The largest herd size category filed the lowest NFIFO per CWT EQ of \$2.16 for 2008. However, when the amount paid to family members is added back into NFI and multiplied by the number of CWT EQ per farm, the return to the owner-manager-operator-managers tell a different story. The larger herds return an average of \$377,335 for family living and return to equity capital versus \$50,223 for those in the “<50 cow” herd-size category. Note: this point was made earlier but because of its importance is stated here again.

Table 6
Milk Production Costs As % of revenue 2008

Range in Herd Size	<=50 Cows	51 to 75	76 to 100	101 to 150	151 to 250	> 250 Cows
Number of Farms	79	141	95	69	59	71
Cows per Farm	40	62	88	126	193	581
Total Number of Cows	3,197	8,802	8,365	8,665	11,361	41,226
Milk Sold per Cow (lbs)	18,242	20,499	20,203	20,901	21,582	23,742
Dairy Livestock Sales per Cow	\$325	\$294	\$297	\$237	\$221	\$189
Crop Acres per Cow	4.81	4.13	3.90	3.24	2.74	1.55
Total Crop Acres Farmed	195	258	343	407	528	900
Cost of Items for Resale	0.02	0.05	0.00	0.02	0.00	0.00
Breeding Fees	1.11	1.32	1.14	1.24	1.31	1.19
Car and Truck Expenses	0.96	0.65	0.55	0.42	0.25	0.17
Chemicals	1.84	1.40	1.77	1.24	1.23	0.76
Custom Heifer Raising Expenses	0.00	0.06	0.11	0.10	0.08	0.72
Custom Hire (Machine Work)	1.51	3.28	2.68	2.47	2.97	3.15
Feed Purchase	16.35	16.53	16.66	18.80	20.24	28.47
Fertilizer and Lime	3.67	3.82	3.55	2.73	2.18	1.26
Freight and Trucking	1.36	1.16	0.94	0.87	0.90	1.15
Gasoline, Fuel, and Oil	4.59	4.30	4.35	4.17	3.80	2.99
Farm Insurance	1.86	1.64	1.49	1.42	1.28	0.64
Rent/Lease Equipment	0.16	0.29	0.15	0.28	0.24	0.47
Rent/Lease Other	2.03	2.53	3.11	2.84	3.40	2.65
Repairs and Maintenance	0.88	0.95	0.57	0.60	0.31	0.27
Building and Fence Repairs	0.93	1.35	1.63	1.54	1.25	1.62
Machinery Repairs	3.37	3.30	3.33	3.41	3.13	2.13
Seeds and Plants Purchased	3.01	2.97	2.90	2.39	1.98	1.39
Supplies Purchased	3.41	3.18	3.03	2.76	2.66	1.74
Taxes	1.46	1.07	0.91	0.95	0.67	0.51
Utilities	2.90	2.39	2.39	2.30	2.07	1.57
Veterinary Fees and Medicine	2.15	2.47	2.41	2.37	2.63	2.93
Other Farm Expenses	2.50	3.09	3.94	4.01	4.68	7.41
Marketing & Hedging	0.74	0.72	0.71	0.72	0.72	1.03
- Change in Prepaid Expenses	0.84	0.39	0.27	0.41	0.47	0.28
Change in Accounts Payable	0.26	0.21	0.44	0.23	(0.24)	0.20
Depreciation on Purchased Breeding Livestock	0.87	1.12	0.97	1.27	1.63	1.47
Basic Costs	58.82	60.24	59.98	59.55	59.85	66.18
Mortgage Interest	1.56	1.84	1.63	2.09	2.11	1.60
Other Interest	1.75	1.59	1.79	2.36	1.86	2.76
SST & Emp Bens (Dep)	2.44	1.25	0.97	0.58	0.40	0.08
SST & Emp Bens (Non-dep)	0.53	1.43	1.25	1.35	1.30	1.69
Labor Hired (Dependents)	1.94	1.44	1.50	0.72	0.65	0.20
Labor Hired (Non-dep)	1.44	3.60	4.49	6.80	7.67	9.25
Dpr - Mach, equip, build	9.48	9.32	8.38	8.73	7.20	6.43
Total Allocated Costs	77.96	80.72	80.01	82.19	81.04	88.21
Total Farm Incomes	100	100	100	100	100	100
NFIFO*	22.04	19.28	19.99	17.81	18.96	11.79
(loss) on sale of all Farm Capital Assets	0.49	0.54	0.47	0.11	0.34	0.32
NFI	22.54	19.82	20.46	17.92	19.30	12.10

*Net Farm Income from Operations

Table 6

Results - Percent of Gross Revenue

The complications faced and explanations offered to deal with the various cost of production methods are in large part due to our historic desire to put cost of production in units of the standard amounts/weights of product produced/marketed. The alternative is a method used by almost every other business - costs Per Dollar or Percent of Revenue. With this method it doesn't matter whether the price between years or farms is the same, the results are comparable.

Table 6 itemizes the average costs of production in six herd size categories as a percentage of gross revenue. To assist in your understanding of the table, the "Range in Herd Size-76 to 100" column is used as an example.

For this group of farms there were 95 herds in the data set that had more than 76 cows and less than 101 cows. Those herds averaged 88 cows per farm and sold an average of 20,203 pounds of milk per cow. In addition to milk and other farm commodity sales, this group of farms also had average Dairy Livestock Sales per Cow of \$297. This group of farms averaged of 3.9 crop acres per cow and farmed 343 acres of cropland.

The average percentage of revenue represented by Purchased Feed was 16.66%. In addition, these farms paid 1.77% of gross revenue for Crop Chemicals, 3.55% for Fertilizer & Lime, 4.96% for Repairs and 2.41% for Veterinary & Medicine costs.

In 2008 there was an increase in Prepaid Expenses constituting 0.27% of revenue as well as an increase of 0.44% of revenue in Accounts Payable. Other Interest was 1.79% of total revenue in 2008.

Total Basic Costs for the 76-100 cow herd size farms totaled 59.98% of revenue in 2008. In addition to Basic Costs the 2008 group of farms paid 5.99% of revenue in Hired Labor (1.5% to Dependents and 4.49% to Non-dependents).

Social Security Taxes plus Benefits totaled 2.22% of revenues (0.97% for Dependents and 1.25% for Non-dependents) in 2008. There was also 3.42% (1.63% plus 1.79%) of interest expenses. In 2008, Depreciation claimed amounted to 9.35% of revenue. Some of that depreciation (0.97%) was taken on purchased livestock.

The Total Allocated Costs are 80.01% in 2008 The Total Income this year and every year when evaluated on a % of Gross Revenue is always 100%. The Net Farm Income from Operations (NFIFO) in 2008 was 19.99%. Net Farm Income totaled 20.46% of revenues.

With milk cost of production on a Per Dollar or Percent of Gross revenue basis, units and value of product produced become mute points. With Per Dollar or Percentage of Revenue, it doesn't matter whether the business produces single or joint products.

Check Table-6 values against your costs to see if you are competitive. For example, my total allocated costs are 87.5% of my Total Gross Revenue, what does it mean? It means that you are competitive with those whose costs are above 87.5% and less so with those who's are below.

Compared to the average of the 2008 AgFA© database of 80.01% you would be somewhat less competitive. You would want to go back to the itemized costs comparing yours to the AgFA© average to pinpoint opportunities for improvement.

The percent of gross revenue approach recognizes the number one goal of business, to create wealth. Productivity and profitability measures are now in terms of dollars produced versus bushels, tons, pounds or CWT of produce marketed. With cost of production as a Per-Dollar or Percentage of Gross Revenue value, the relationships between costs and sales are automatic.⁴

Table 7
Number of Herds in basic Cost Production Ranges in 2008

Expense per CWT EQ	Number of Farms**	Percent of Farms *
Less than \$6.00	4	0.77%
6.01 – 7.00	6	1.2
7.01 – 8.00	21	4.0
8.01 – 9.00	42	8.1
9.01 – 10.00	65	12.6
10.01- 11.00	107	21.0
11.01 – 12.00	85	16.0
12.00 – 13.00	88	17.0
13.00 - 14.00	52	10.0
14.00 – 15.00	21	4.0

** Total farms in this analysis is 517 * Percent column may not add to 100 due to rounding

⁴ Bolton, Ken and Gary Frank. Cost of Production vs. Cost of Production And then there is, Cost of Production!, University of Wisconsin, Center for Dairy Profitability, September 2009. Available on the Center for Dairy Profitability website: <http://cdp.wisc.edu>

Summary

The average herd size for herds summarized in 2008 was 158 cows. The milk sold per cow averaged 22,212 pounds. The average herd size in 2007 was 148 cows and average milk sold was 21,958 pounds.

Total economic cost of production per CWT EQ (\$17.66) was \$0.70 less than the U.S. All Milk Price (\$18.36) in 2008. This means that the average Wisconsin dairy producer had an economic gain of \$0.70 per CWT EQ produced in 2008. In 2007 the total economic cost of production was \$1.42 less than the U.S. All Milk Price. The 2006 cost of production was also more than the US All Milk Price by \$0.60 per CWT EQ.

Purchased feed costs remain the largest cost item having declined in 2006 over 2005 but increasing again in 2007 and 2008. 2008 purchased feed prices were \$0.58 per CWT EQ over 2007. Purchased Feed costs per cow averaged \$1,201, \$942, \$747, \$843 and \$891 for 2008, 2007, 2006, 2005 and 2004 respectively. Purchased Feed costs per CWT EQ were \$4.30, \$3.72, \$2.50, \$2.97 and \$3.41 for the same years.

Total Allocated Costs per cow averaged \$4,335 in 2008, an increase of \$422 over 2007 (\$3,913). The return to the farmer's (and family's) unpaid labor, management and equity capital (Net Farm Income from Operations) was lower at \$805 as compared to \$951 in 2007, \$521 in 2006 and \$792 for 2005 levels.