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MAY 1999

PRO-DAIRY

E.B. 99-08

**DAIRY FARM  
BUSINESS SUMMARY**

***NEW YORK  
LARGE HERD  
FARMS,  
300 COWS  
OR LARGER  
1998***



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**1998 DAIRY FARM BUSINESS SUMMARY**  
**LARGE HERD DAIRY FARMS**  
**300 Cows or Larger**

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# 1998 DAIRY FARM BUSINESS SUMMARY LARGE HERD DAIRY FARMS

## INTRODUCTION

Dairy farmers throughout New York state have been participating in Cornell Cooperative Extension Farm Business Summary and Analysis Programs since the early 1950's. Managers of each participating farm business receive a comprehensive summary and analysis of the farm business.

Larger farms employ different technologies and management systems, and thus, achieve different efficiencies than smaller farms. This makes comparisons of a large farm's performance to the average of farms of all sizes not as meaningful as comparing to the average of similar sized farms. This report contains a summary and analysis of dairy farms with 300 or more cows. In addition, farms are sorted into two categories for many comparisons, 300 to 500 cows and 500 and more cows per farm.

Farm managers should determine their business performance and then compare it with that of other similar farms. In this manner, strengths and areas for improvement can be identified. A goal that many managers set is to strive to be in the top 20 percent of farms for many of the production and financial benchmarks. Each manager should select and then revise annually the goals which their business strives to achieve.

### **Program Objective**

The primary objective of the Dairy Farm Business Summary, DFBS, is to help farm managers improve the business and financial management of their dairy farm through appropriate use of historical farm data and the application of modern farm business analysis techniques. This information can also be used to track changes within the business, establish goals that will enable the business to better meet its objectives, compare the performance of the farm to other dairy producers, and establish a basis for financial projection of planned changes within the business.

### **Format**

This report is comprised of six sections. The first section charts the progress of the large herd farm business over two years. Forty-four of the large herd farms participated in the summary the last two years. The averages of selected business factors are presented for these farms and the changes that occurred from 1997 to 1998 are calculated.

The second section contains charts for additional analysis of large herd farms. The top 20 percent large farms (by rate of return on assets without appreciation) are compared to the average for all 57 large herd farms that participated in the 1998 DFBS program. Also presented is information concerning bST usage, culling rates, dairy enterprise efficiency, and milk parlor efficiency.

The summary and analysis section lists the average data for the 57 large herd farms that participated in the 1998 DFBS program. The format follows that of the individual farm DFBS printout and contains a brief explanation of each table and chart with comparisons to the top 20% large farms.

The fourth section presents a condensed summary and selected business factors for farms with 300-500 cows and farms with more than 500 cows.

The fifth section contains the income and expense profiles for the 300 – 500 cow farms and 500 and more cow farms on a per cow and per cwt. of milk basis.

The sixth section contains business charts for key measures of farm performance.

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<sup>1</sup>The large herd summary is comprised of farms with 300 or more cows. Cayuga, Clinton, Cortland, Erie, Genesee, Jefferson, Livingston, Niagara, Onondaga, Ontario, St. Lawrence, Saratoga, Schuyler, Washington, Wayne and Wyoming counties had farms of this size in 1998. This report was written by Jason Karszes, Senior Extension Associate, Pro-Dairy and Wayne A. Knoblauch, Professor, Farm Management. Linda Putnam was in charge of data preparation. Faye Butts prepared the publication. Data were collected by Cornell Cooperative Extension educators across the state.

## PROGRESS OF THE FARM BUSIENS

Comparing your business with average data from large DFBS dairy farms that participated in both of the last two years can be helpful in comparing performance and establishing goals for your business. It is equally important for you to determine the progress your business has made over the past two or three years, to compare this progress to your goals, and to set goals for the future. Please refer to the table on page 3 for selected factors from 44 farms with over 300 cows that participated in this DFBS project each of the last two years.

From 1997 to 1998 there were three major areas that changed significantly. The first was milk price, the second was feed costs, and the third was growing conditions. These three areas all changed in a direction that was favorable for most dairy producers and the combination of the factors dramatically changed the profitability of dairy farms in 1998.

Milk prices increased 14.5 percent or \$1.96 per cwt. from 1997 to 1998. This large increase in milk price allowed continued growth of herd size by 6.9 percent, and a 7.2 percent increase in the tillable land worked. Investment per cow increased to \$5,709, a 2.2 percent increase. With the increase in herd size, worker equivalents also increased by 5.9 percent.

With the increase in worker equivalents, cows per worker stayed relatively the same, increasing from 45 to 46 cows per worker. Milk sold per worker was relatively unchanged, with the one cow per worker increase offset by the small decrease in milk sold per cow.

While labor efficiency stayed relatively flat, labor costs continued to increase. Labor cost per cwt. of milk sold increased 8.1 percent, and hired labor cost per worker equivalent increased 9.2 percent, to a level of \$33,312 per worker equivalent. Continued low unemployment and the ability of dairy producers to pay more are two reasons behind the increases. While labor costs increased on a per cwt. basis, due to the large increase in milk price, the labor cost as a percent of milk sales fell 5.7 percent, to 16.4 percent.

Feed as a percent of milk sales fell 23.5 percent, with the average 300 cow and larger farm spending \$4.07 per cwt. for purchased grain and concentrates, a decrease of 48 cents from the previous year. Total feed and crop input costs decreased 30 cents, or 6 percent. While feed costs did decrease significantly, this decrease was offset by increases in labor costs, crop input costs, and machinery costs. This led to an actual increase of 1.9 percent in the total cost to operate the farm on, and an increase in the operating cost of producing milk of 0.6 percent.

Forage yields increased 26.7 percent for hay dry matter yields and 20.3 percent for as fed corn silage yields. These increases in forage yield coupled with the increase in tillable land worked led to large increases in grown forage inventory. While most of the state showed increased yields, certain parts of the state did not.

The combination of increased milk price, decreased feed costs, and increases in feed inventory all led to large improvements in earnings. Net farm income without appreciation increased 214 percent to \$358,798, and net farm income with appreciation increased 198 percent to \$427,403. Labor and management income per operator manager increased 803 percent to \$132,803. Rate of return to all capital without appreciation increased 147 percent to 11.6 percent and rate of return on equity capital without appreciation increased 609 percent to 15.6 percent.

Farm net worth increased 18.5 percent from the previous year. Debt per cow decreased slightly, and the debt to asset ratio fell to 0.46.

Overall, 1998 was a very good year for the 300 cow and larger farms. Profit generation and net worth growth were the largest to occur in the 90's and many farms made significant financial progress towards their individual goals. While there was significant improvement in profitability, the changes on individual farms were quite varied, with some farms actually doing worse in 1998 than 1997. The challenge in 1998 was to maximize milk production while maintaining cost control and wisely managing the excess cash flow. Farms that took advantage of 1998 most profitably were those farms that have improved their ability to produce milk at a lower cost and to manage through low cash price cycles.

**PROGRESS OF THE FARM BUSINESS**  
Same 44 Large Herd Dairy Farms, 1997 & 1998

Selected Factors	Average of 44 Farms		Percent Change
	1997	1998	
<u>Size of Business</u>			
Average number of cows	569	608	6.9
Average number of heifers	410	453	10.5
Milk sold, lbs.	12,700,383	13,525,034	6.5
Worker equivalent	12.61	13.35	5.9
Total tillable acres	1,043	1,118	7.2
<u>Rates of Production</u>			
Milk sold per cow, lbs.	22,309	22,233	-0.3
Hay DM per acre, tons	3.0	3.8	26.7
Corn silage per acre, tons	17.2	20.7	20.3
<u>Labor Efficiency &amp; Costs</u>			
Cows per worker	45	46	2.2
Milk sold/worker, lbs.	1,007,168	1,013,111	.6
Hired labor cost/cwt.	\$2.36	\$2.55	8.1
Hired labor cost/worker	\$30,501	\$33,312	9.2
Hired labor cost as % of milk sales	17.4%	16.4%	-5.7
<u>Cost Control</u>			
Grain & conc. purchased as % of milk sales	34%	26%	-23.5
Grain & conc. per cwt. milk	\$4.55	\$4.07	-10.5
Dairy feed & crop expense per cwt. milk	\$5.32	\$5.00	-6.0
Labor & mach. costs/cow	\$998	\$1,069	7.1
Total farm operating costs per cwt. sold	\$13.17	\$13.42	1.9
Interest costs per cwt. milk	\$0.89	\$0.89	0.0
Milk marketing costs per cwt. milk sold	\$0.45	\$0.47	4.4
Operating cost of producing cwt. of milk	\$11.84	\$11.91	0.6
<u>Capital Efficiency</u> (average for the year)			
Farm capital per cow	\$5,584	\$5,709	2.2
Mach. & equip. per cow	\$901	\$935	3.8
Asset turnover ratio	0.62	0.69	11.3
<u>Income Generation</u>			
Gross milk sales per cow	\$3,026	\$3,452	14.1
Gross milk sales per cwt.	\$13.56	\$15.52	14.5
Net milk sales per cwt.	\$13.11	\$15.05	14.8
Dairy cattle sales per cow	\$238	\$205	-13.9
Dairy calf sales per cow	\$18	\$24	33.3
<u>Profitability</u>			
Net farm income w/o apprec.	\$114,253	\$358,798	214
Net farm income w/apprec.	\$143,459	\$427,403	198
Labor & mgt. income per oper./manager	\$14,702	\$132,803	803
Rate of return on equity capital w/o apprec.	2.2%	15.6%	609
Rate of return on all capital w/o apprec.	4.7%	11.6%	147
<u>Financial Summary</u>			
Farm net worth, end year	\$1,638,527	\$1,941,528	18.5
Debt to asset ratio	0.50	0.46	-8.0
Farm debt per cow	\$2,746	\$2,703	-1.6

**RECEIPTS AND EXPENSES PER COW AND PER HUNDREDWEIGHT**  
Same 44 Large Herd Dairy Farms, 1997 & 1998

Item	1997		1998	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average Number of Cows	569		608	
Cwt. Of Milk Sold		127,004		135,250
<u>Accrual Operating Receipts</u>				
Milk	\$3,026	\$13.56	\$3,452	\$15.52
Dairy cattle	238	1.06	205	0.92
Dairy calves	18	0.08	24	0.11
Other livestock	9	0.04	3	0.02
Crops	30	0.13	68	0.31
Miscellaneous receipts	76	0.34	85	0.38
Total	<u>\$3,397</u>	<u>\$15.22</u>	<u>\$3,838</u>	<u>\$17.25</u>
<u>Accrual Operating Expenses</u>				
Hired labor	\$526	\$2.36	\$567	\$2.55
Dairy grain & concentrate	1,015	4.55	906	4.07
Dairy roughage	25	0.11	45	0.20
Nondairy feed	0	0.00	0	0.00
Machine hire, rent & lease	75	0.34	83	0.37
Machine repairs & vehicle expense	121	0.54	146	0.66
Fuel, oil & grease	49	0.22	47	0.21
Replacement livestock	35	0.16	46	0.21
Breeding	29	0.13	32	0.14
Veterinary & medicine	101	0.45	108	0.49
Milk marketing	101	0.45	105	0.47
Bedding	44	0.20	50	0.23
Milking supplies	65	0.29	71	0.32
Cattle lease	11	0.05	13	0.06
Custom boarding	39	0.17	51	0.23
bST expense	67	0.30	64	0.29
Other livestock expense	35	0.16	30	0.13
Fertilizer & lime	60	0.27	66	0.29
Seeds & plants	41	0.18	43	0.19
Spray & other crop expense	47	0.21	53	0.24
Land, building & fence repair	47	0.21	58	0.26
Taxes	31	0.14	31	0.14
Real estate rent/lease	56	0.25	58	0.26
Insurance	27	0.12	29	0.13
Utilities	65	0.29	59	0.26
Interest paid	199	0.89	198	0.89
Miscellaneous	27	0.12	27	0.12
Total Operating Expenses	<u>\$2,940</u>	<u>\$13.17</u>	<u>\$2,986</u>	<u>\$13.42</u>
Expansion livestock	74	0.33	48	0.21
Machinery depreciation	106	0.48	106	0.48
Real Estate Depreciation	76	0.34	107	0.48
Total Expenses	<u>\$3,196</u>	<u>\$14.32</u>	<u>\$3,247</u>	<u>\$14.60</u>
Net Farm Income without apprec.	201	0.90	590	2.65

**TOP 20 PERCENT COMPARISON TO AVERAGE AND FACTORS CONCERNING BST, CULLING,  
DAIRY ENTERPRISE, AND PARLOR EFFICIENCY**

On the following page selected factors for the top 20% of large herd farms as sorted by rate of return on all assets without appreciation are compared to the same factors for the average of all 57 farms over 300 cows that participated in the DFBS project in 1998. It is useful to see what factors are different between the average and the top 20% and to ask questions about where your own business fits into these factors.

In 1998, 30 of the 57 farms over 300 cows filled out a supplementary data collection form that dealt with some additional management concerns of dairy farms. Reported below are the averages and business charts for these factors. Each category is sorted independently, therefore farms that are the highest or lowest in one column may not necessarily be the highest or lowest in the next column. Please note that this is only descriptive data from 30 farms and only represents these 30 farms.

Seven farms that were in the top 20 percent in 1998 were also in the summary in 1997. The table on page 7 shows income and expenses for these farms for both 1997 and 1998. Identifying the changes that occurred on these farms provides insight into what happened on the most profitable farms. How your farm changed in comparison should provide valuable management information.

**SUPPLEMENTAL FARM BUSINESS CHART**

Large Herd Farms, 1998

Culling Rate %	bST Expense Per Cow	bST Expense Per Cwt of Milk	% Herd on bST	Milk lbs Produced Per Labor Hour
30 farms	52 farms	52 farms	52 farms	30 farms
23.7%	\$29.09	\$0.13	21%	2,387
29.6	\$59.00	\$0.28	43	1,809
31.9	\$72.60	\$0.33	53	1,455
33.4	\$82.20	\$0.36	60	1,264
38.5	\$91.55	\$0.39	67	949
Average				
31.4	\$66.63	\$0.30	49	1,573

Total Cows by Labor hour Milking	Milk Harvested Per Machine	For Dairy Enterprise Only		
		Worker Equivalents	Cows per Worker Equivalent	Pounds Sold per Worker Equivalent
30 farms	30 farms	30 farms	30 farms	30 farms
39.4	808,940	12.04	148	3,152,467
28.7	647,243	8.26	129	2,783,066
24.2	566,215	5.58	102	2,333,920
22.4	418,601	3.74	90	1,992,244
16.4	328,668	2.81	59	1,252,458
Average				
26.2	553,934	6.48	106	2,302,831



**TOP 20 PERCENT VS. AVERAGE**  
57 Large Herd Dairy Farms, 1998

Selected Factors	Average 1998	Top 20% 1998	Percent Difference
<u>Size of Business</u>			
Average number of cows	605	534	-11.7
Average number of heifers	453	343	-24.3
Milk sold, lbs.	13,571,369	12,316,783	-9.2
Worker equivalent	13.33	10.68	-19.9
Total tillable acres	1,157	864	-25.3
<u>Rates of Production</u>			
Milk sold per cow, lbs.	22,424	23,061	2.8
Hay DM per acre, tons	3.86	4.35	12.7
Corn silage per acre, tons	19.81	20.10	1.5
<u>Labor Efficiency &amp; Costs</u>			
Cows per worker	45	50	11.1
Milk sold/worker, lbs.	1,018,107	1,153,257	13.3
Hired labor cost/cwt.	\$2.46	\$2.07	-15.9
Hired labor cost/hired worker	\$30,374	\$29,274	-3.6
Hired labor cost as % of milk sales	15.8%	13.5%	-15.6
<u>Cost Control</u>			
Grain & conc. purchased as % of milk sales	26%	25%	-3.8
Grain & conc. per cwt. milk	\$4.05	\$3.87	-4.4
Dairy feed & crop expense per cwt. milk	\$4.99	\$4.65	-6.8
Labor & mach. costs/cow	\$1,072	\$926	-13.6
Total farm operating costs per cwt. sold	\$13.24	\$11.59	-12.5
Interest costs per cwt. milk	\$0.89	\$0.89	0.0
Milk marketing costs per cwt. milk sold	\$0.46	\$0.42	-8.7
Operating cost of producing cwt. of milk	\$11.72	\$10.06	-14.2
<u>Capital Efficiency (average for the year)</u>			
Farm capital per cow	\$5,707	\$5,501	-3.6
Mach. & equip. per cow	\$972	\$980	0.8
Asset turnover ratio	0.70	0.75	7.1
<u>Income Generation</u>			
Gross milk sales per cow	\$3,483	\$3,544	1.8
Gross milk sales per cwt.	\$15.52	\$15.37	-1.0
Net milk sales per cwt.	\$15.07	\$14.94	-0.9
Dairy cattle sales per cow	\$210	\$262	24.8
Dairy calf sales per cow	\$23	\$20	-13.0
<u>Profitability</u>			
Net farm income without appreciation	\$375,168	\$516,176	37.6
Net farm income with appreciation	\$450,065	\$591,893	31.5
Labor & mgt. income per oper./manager	\$138,691	\$266,085	91.9
Rate of return on equity capital w/o apprec.	16.6%	30.5%	83.7
Rate of return on all capital w/o apprec.	12.0%	18.9%	57.5
<u>Financial Summary</u>			
Farm net worth, end of year	\$1,937,675	\$1,696,069	-12.5
Debt to asset ratio	0.46	0.47	2.2
Farm debt per cow	\$2,703	\$2,698	-0.2

**RECEIPTS AND EXPENSES PER COW AND PER HUNDREDWEIGHT**

Same 7 Top 20% Large Herd Dairy Farms, 1997 &amp; 1998

Item	1997		1998	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average Number of Cows	405		478	
Cwt. Of Milk Sold		93,376		107,878
<u>Accrual Operating Receipts</u>				
Milk	\$3,107	\$13.48	\$3,475	\$15.40
Dairy cattle	327	1.42	289	1.28
Dairy calves	23	0.10	27	0.12
Other livestock	2	0.01	2	0.01
Crops	77	0.33	79	0.35
Miscellaneous receipts	37	0.16	81	0.36
Total	<u>\$3,573</u>	<u>\$15.50</u>	<u>\$3,953</u>	<u>\$17.52</u>
<u>Accrual Operating Expenses</u>				
Hired labor	\$436	\$1.89	\$442	\$1.96
Dairy grain & concentrate	1,063	4.61	899	3.98
Dairy roughage	63	0.27	60	0.27
Nondairy feed	0	0.00	0	0.00
Machine hire, rent & lease	30	0.13	35	0.15
Machine repairs & vehicle expense	112	0.48	103	0.46
Fuel, oil & grease	34	0.15	39	0.17
Replacement livestock	67	0.29	84	0.37
Breeding	18	0.08	23	0.10
Veterinary & medicine	103	0.45	106	0.47
Milk marketing	110	0.48	109	0.48
Bedding	51	0.22	46	0.20
Milking supplies	56	0.24	55	0.24
Cattle lease	4	0.02	0	0.00
Custom boarding	17	0.07	23	0.10
bST expense	70	0.30	62	0.27
Other livestock expense	31	0.13	36	0.16
Fertilizer & lime	44	0.19	52	0.23
Seeds & plants	32	0.14	24	0.11
Spray & other crop expense	35	0.15	34	0.15
Land, building & fence repair	38	0.16	47	0.21
Taxes	18	0.08	23	0.10
Real estate rent/lease	48	0.21	43	0.19
Insurance	28	0.12	23	0.10
Utilities	61	0.26	51	0.23
Interest paid	241	1.04	253	1.12
Miscellaneous	27	0.12	23	0.10
Total Operating Expenses	<u>\$2,835</u>	<u>\$12.30</u>	<u>\$2,694</u>	<u>\$11.94</u>
Expansion livestock	186	0.81	137	0.61
Machinery depreciation	99	0.43	116	0.51
Real Estate Depreciation	67	0.29	110	0.49
Total Expenses	<u>\$3,186</u>	<u>\$13.82</u>	<u>\$3,057</u>	<u>\$13.55</u>
Net Farm Income without apprec.	387	1.68	896	3.97

## SUMMARY AND ANALYSIS OF THE FARM BUSINESS

### **Business Characteristics**

Planning the optimal management strategies is a crucial component of operating a successful farm. Various combinations of farm resources, enterprises, business arrangements, and management techniques are used by the dairy farmers in this region. The following table shows important farm business characteristics and the number of farms with each characteristic.

**BUSINESS CHARACTERISTICS**  
57 Large Herd Dairy Farms, 1998

Type of Farm	Number	Type of Barn	Number
Dairy	57	Stanchion/Tie-Stall	0
		Freestall	56
		Combination	1
Type of Ownership	Number	Milking System	Number
Owner	55	Pipeline	0
Renter	2	Herringbone parlor	38
		Other parlor	19
Type of Business	Number	Milking Frequency	Number
Single proprietorship	18	2x/day	7
Partnership	24	3x/day	47
Corporation	15	Other	3
Business Record System	Number	Production Records	Number
Account Book	4	DHIC	47
AgriFax (mail-in only)	6	Owner-Sampler	6
On-Farm Computer	43	Other	2
Other	4	None	2
BST Usage	Number		
<25%	9		
25-75%	37		
>75%	7		
Stopped Use in 1998	0		
Not Used	4		

### **Income Statement**

In order for an income statement to accurately measure farm income, it must include cash transactions and accrual adjustments (changes in accounts payable, accounts receivable, inventories, and prepaid expenses).

Cash paid is the actual cash outlay during the year and does not necessarily represent the cost of goods and services actually used in 1998.

Change in inventory: Increases in inventories of supplies and other purchased inputs are subtracted in computing accrual expenses because they represent purchased inputs not actually used during the year. Decreases in purchased inventories are added to expenses because they represent inputs purchased in a prior year and used this year.

**CASH AND ACCRUAL FARM EXPENSES**  
57 Large Herd Dairy Farms, 1998

Expense Item	Cash Paid	-	Change in Inventory or Prepaid Expense	+	Change in Accounts Payable	=	Accrual Expenses
<u>Hired Labor</u>	\$ 333,442		\$ 746 <<		\$ 916		\$ 333,613
<u>Feed</u>							
Dairy grain & concentrate	607,948		43,625		-14,673		549,650
Dairy roughage	33,393		4,091		-965		28,337
Nondairy	8		0		0		8
<u>Machinery</u>							
Mach. hire, rent/lease	54,546		3,384 <<		-296		50,866
Mach. rep. & farm veh. exp	91,318		1,743		-561		89,014
Fuel, oil & grease	30,753		729		-446		29,577
<u>Livestock</u>							
Replacement livestock	25,820		0 <<		1,349		27,169
Breeding	21,687		775		-455		20,457
Vet & medicine	67,641		662		-1,885		65,094
Milk marketing	61,992		0 <<		93		62,084
Bedding	30,091		867		-146		29,079
Milk supplies	45,462		2,431		-200		42,831
Cattle lease/rent	8,683		0 <<		-31		8,653
Custom boarding	26,317		298 <<		-88		25,930
bST expense	39,933		1,670		-242		38,021
Other livestock expense	17,080		208		-115		16,757
<u>Crops</u>							
Fertilizer & lime	48,169		6,744		-1,213		40,213
Seeds & plants	33,511		6,605		-361		26,545
Spray, other crop exp.	34,384		703		-1,537		32,145
<u>Real Estate</u>							
Land/bldg./fence repair	35,404		246		-17		35,141
Taxes	19,661		648 <<		-263		18,750
Rent & lease	36,614		686 <<		-157		35,771
<u>Other</u>							
Insurance	17,130		149 <<		70		17,051
Utilities (farm share)	35,270		82 <<		43		35,230
Interest paid	121,704		35 <<		-451		121,218
Miscellaneous	18,274		157		-974		17,143
Total Operating Expenses	\$ 1,896,235		\$ 77,283		\$ -22,606		\$ 1,796,346
Expansion livestock	\$ 29,092		\$ 0 <<		\$ 393		\$ 29,485
Machinery depreciation							\$ 71,228
Building depreciation							\$ 70,206
<b>Total Accrual Expenses</b>							<b>\$ 1,967,265</b>

Change in prepaid expenses (noted above by <<) is a net change in non-inventory expenses that have been paid in advance of their use. If 1998 funds used to prepay 1999 leases exceed the amount of 1998 leases prepaid in 1997, the amount of this excess is subtracted to exclude it from 1998 accrual lease expenses. The excess prepaid lease is charged against the future year's business operation. A decrease in prepaid lease is added to accrual expenses because it represents use of resources during this year that were paid for in past years.

Change in accounts payable: An increase in accounts payable from beginning to end of year is added when calculating accrual expenses because these expenses were incurred (resources used) in 1998 but not paid for. A decrease is subtracted because the resource was used before 1998.

Accrual expenses are the costs of inputs actually used in this year's production. They are the total of cash paid, as well as changes in inventory, prepaid expenses, and accounts payable.

**CASH AND ACCRUAL FARM RECEIPTS**  
57 Large Herd Dairy Farms, 1998

Receipt Item	Cash Receipts	+	Change in Inventory	+	Change in Accounts Receivable	=	Accrual Receipts
Milk sales	\$2,070,967				\$ 35,955		\$ 2,106,921
Dairy cattle	66,663	\$	60,046		62		126,772
Dairy calves	13,714				21		13,735
Other livestock	1,822		-122		0		1,701
Crops	13,604		25,159		1,333		40,097
Government receipts	21,008		-159 <sup>2</sup>		763		21,612
Custom machine work	6,130				-878		5,252
Gas tax refund	567				3		570
Other	<u>25,764</u>				7		25,771
Less nonfarm noncash cap.**			<u>0</u> <sup>3</sup>				<u>0</u>
Total Receipts	\$2,220,239	\$	84,924	\$	37,268	\$	2,342,433

<sup>2</sup> Change in advanced government receipts.

<sup>3</sup> Gifts or inheritances of cattle or crops included in inventory

Cash receipts include the gross value of milk checks received during the year plus all other payments received from the sale of farm products, services, and government programs. Nonfarm income is not included in calculating farm profitability.

Changes in inventory of assets produced by the business are calculated by subtracting beginning of year values from end of year excluding appreciation. Increases in livestock inventory caused by herd growth and/or quality are added, and decreases caused by herd reduction and/or quality are subtracted. Changes in inventories of crops grown are also included. An annual increase in advanced government receipts is subtracted from cash income because it represents income received in 1998 for the 1999 crop year in excess of funds earned for 1998. Likewise, a decrease is added to cash government receipts because it represents funds earned for 1998 but received in 1997.

Changes in accounts receivable are calculated by subtracting beginning year balances from end year balances. The January milk check for this December's marketings compared with the previous January's check is included as a change in accounts receivable.

Accrual receipts represent the value of all farm commodities produced and services actually generated by the farm business during the year.

### Profitability Analysis

Farm operators<sup>4</sup> contribute labor, management, and equity capital to their businesses and the combination of these resources, and the other resources used in the business, determines profitability. Farm profitability can be measured as the return to all family resources or as the return to one or more individual resources such as labor and management.

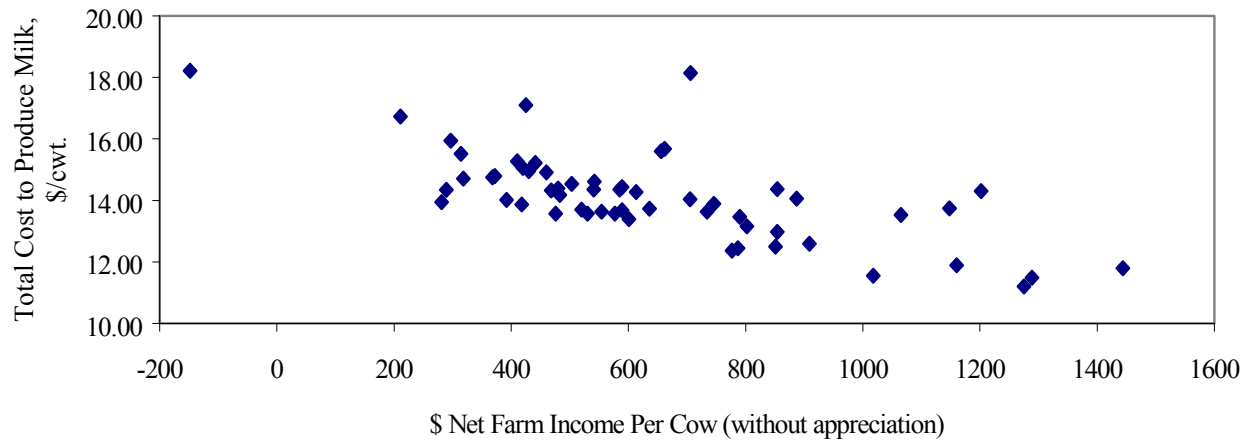
Net farm income is the return to the farm operators and other unpaid family members for their labor, management, and equity capital. It is the farm family's net annual return from working, managing, financing, and owning the farm business. This is not a measure of cash available from the year's business operation. Cash flow is evaluated later in this report.

Net farm income is computed both with and without appreciation. Appreciation represents the change in values caused by annual changes in prices of livestock, machinery, real estate inventory, and stocks and certificates (other than Farm Credit). Appreciation is a major factor contributing to changes in farm net worth and must be included for a complete profitability analysis.

#### NET FARM INCOME 57 Large Herd Dairy Farms, 1998

Item	Average 57 Farms		Average Top 20% <sup>5</sup> Farms	
	Total	Per Cow	Total	Per Cow
Total accrual receipts	\$ 2,342,433		\$ 2,139,333	
Appreciation: Livestock	4,895		17,774	
Machinery	16,827		21,381	
Real Estate	49,855		39,952	
Other Stock/Certificates	3,320		-3,390	
Total Including Appreciation	\$ 2,417,330		\$ 2,215,050	
Total accrual expenses	1,967,265		1,623,157	
Net Farm Income (with appreciation)	\$ 450,065	\$744	\$ 591,893	\$ 1,108
Net Farm Income (w/o appreciation)	\$ 375,168	\$620	\$ 516,176	\$ 967

#### TOTAL COST TO PRODUCE MILK vs. NET FARM INCOME PER COW 57 Large Herd Dairy Farms, 1998



<sup>4</sup>Operators are the individuals who are integrally involved in the operation and management of the farm business. They are not limited to those who own the farm or are formal members of the partnership or corporation.

<sup>5</sup>Top 20% of large herd farms by rate of return on all assets without appreciation.

Labor and management income is the return which farm operators receive for their labor and management used in operating the farm business. Appreciation is not included as part of the return to labor and management because it results from ownership of assets rather than management of the farm business. Labor and management income is calculated by deducting a charge for unpaid family labor and the opportunity cost of using equity capital, at a real interest rate of five percent, from net farm income excluding appreciation. The interest charge of five percent reflects the long-term average rate of return above inflation that a farmer might expect to earn in comparable risk investments.

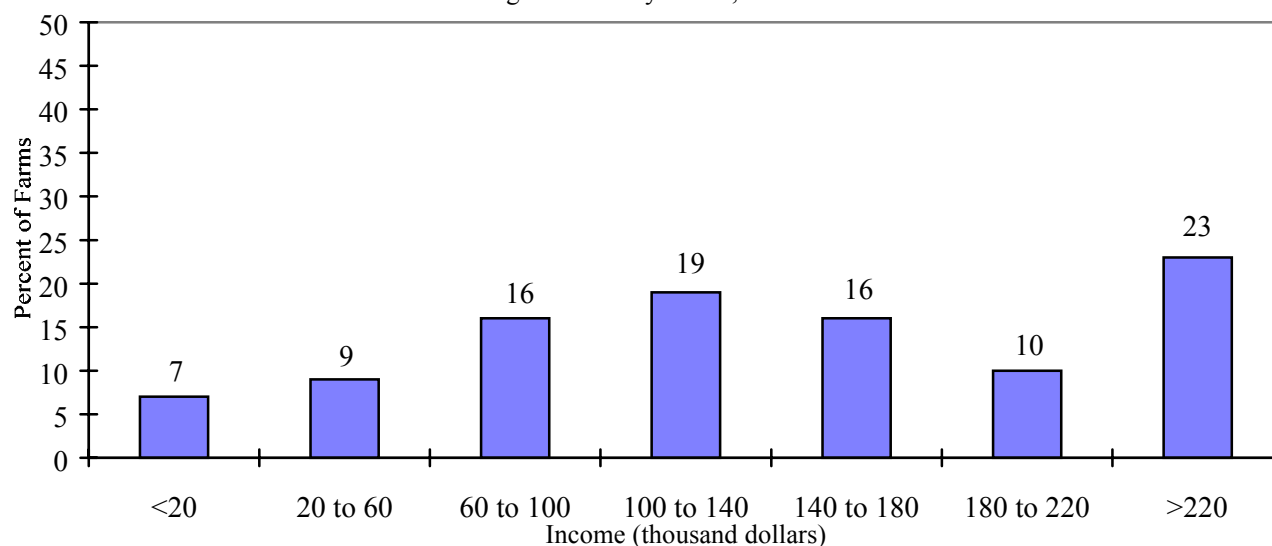
**LABOR AND MANAGEMENT INCOME**  
57 Large Herd Dairy Farms, 1998

Item	Average 57 Farms	Average Top 20% Farms
Net farm income without appreciation	\$ 375,168	\$ 516,176
Family labor unpaid @ \$1,600 per month	- 3,520	- 4,000
Interest on \$1,774,378 (\$1,462,724 for top 20%) average equity capital @ 5% real rate	- 88,719	- 73,136
Labor & Management Income per Farm (2.04 operators/farm; 1.65 operators for top 20%)	\$ 282,929	\$ 439,040
Labor & Management Income per Operator/Manager	\$ 138,691	\$ 266,085

Labor and management income per operator averaged \$138,691 on these 57 farms in 1998. Returns to labor and management were less than \$60,000 on 16 percent of the farms. Labor and management income per operator ranged from \$60,000 to \$140,000 on 35 percent of the farms while 49 percent showed labor and management incomes of \$140,000 or more per operator.

**DISTRIBUTION OF LABOR & MANAGEMENT INCOMES  
PER OPERATOR**

57 Large Herd Dairy Farms, 1998



Return on equity capital measures the net return remaining for the farmer's equity or owned capital after a charge has been made for the owner-operator's labor and management. The earnings or amount of net farm income allocated to labor and management is the opportunity cost of operators' labor and management estimated by the cooperators. Return on equity capital is calculated with and without appreciation. The rate of return on equity capital is determined by dividing the amount returned by the average farm net worth or equity capital. Return on total capital is calculated by adding interest paid to the return on equity capital and then dividing by average farm assets to calculate the rate of return on total capital.

**RETURN ON EQUITY CAPITAL AND RETURN ON TOTAL CAPITAL**  
57 Large Herd Dairy Farms, 1998

Item	Average 57 Farms	Average Top 20% Farms
Net farm income with appreciation	\$ 450,065	\$ 591,893
Family labor unpaid @ \$1,600 per month	- 3,520	- 4,000
Value of operators' labor & management	- 77,038	- 66,091
Return on equity capital with appreciation	\$ 369,507	\$ 521,802
Interest paid	+ 121,218	+ 109,599
Return on total capital with appreciation	\$ 490,725	\$ 631,401
Return on equity capital without appreciation	\$ 294,610	\$ 446,085
Return on total capital without appreciation	\$ 415,828	\$ 555,684
Rate of return on average equity capital:		
with appreciation	20.8%	35.7 %
without appreciation	16.6%	30.5 %
Rate of return on average total capital:		
with appreciation	14.2%	21.5 %
without appreciation	12.0%	18.9 %

**Farm and Family Financial Status**

The first step in evaluating the financial position of the farm is to construct a balance sheet which identifies all the assets and liabilities of the business. The second step is to evaluate the relationship between assets, liabilities, and net worth and changes that occurred during the year.

Financial lease obligations are included in the balance sheet. The present value of all future payments is listed as a liability since the farmer is committed to make the payments by signing the lease. The present value is also listed as an asset, representing the future value the item has to the business. For 1998, leases were discounted by 8.75 percent.

Advanced government receipts are included as current liabilities. Government payments received in 1998 that are for participation in the 1997 program are the end year balance and payments received in 1997 for participation in the 1998 program are the beginning year balance.

Current Portion or principal due in the next year for intermediate and long term debt is included as a current liability.



## 1998 FARM BUSINESS &amp; NONFARM BALANCE SHEET

57 Large Herd Dairy Farms, 1998

Farm Assets	Jan. 1	Dec. 31	Farm Liabilities & Net Worth	Jan. 1	Dec. 31
<u>Current</u>			<u>Current</u>		
Farm cash, checking & savings	\$ 19,943	\$ 12,979	Accounts payable	\$ 56,861	\$ 34,648
Accounts receivable	128,137	165,405	Operating debt	145,807	162,915
Prepaid expenses	5,449	11,477	Short Term	13,269	11,406
Feed & supplies	328,176	424,590	Advanced govt. receipts	249	408
			Current Portion:		
			Intermediate	90,634	112,061
			Long Term	<u>44,718</u>	<u>48,706</u>
Total Current	\$ 481,705	\$ 614,451	Total Current	\$ 351,537	\$ 370,143
<u>Intermediate</u>			<u>Intermediate</u>		
Dairy cows:			Structured debt		
owned	\$ 582,554	\$ 618,516	1-10 years	\$ 577,417	\$ 561,100
leased	19,660	14,035	Financial lease		
Heifers	252,450	281,501	(cattle/machinery)	83,230	68,062
Bulls/other livestock	4,709	4,514	Farm Credit stock	<u>16,235</u>	<u>17,889</u>
Mach./equipment owned	503,460	554,524	Total Intermediate	\$ 676,882	\$ 647,051
Mach./equipment leased	63,570	54,027			
Farm Credit stock	16,235	17,889			
Other stock/certificate	<u>64,202</u>	<u>83,248</u>			
Total Intermediate	\$1,506,840	\$1,628,254			
<u>Long Term</u>			<u>Long Term</u>		
Land/buildings:			Structured debt		
owned	\$1,301,495	\$1,369,658	>10 years	\$ 650,540	\$ 657,494
leased	<u>1,385</u>	<u>1,429</u>	Financial lease		
Total Long Term	\$1,302,880	\$1,371,087	(structures)	<u>1,385</u>	<u>1,429</u>
			Total Long Term	\$ 651,925	\$ 658,923
Total Farm Assets	\$3,291,425	\$3,613,792	Total Farm Liab.	\$1,680,344	\$1,676,117
			FARM NET WORTH	\$1,611,081	\$1,937,675

## Nonfarm Assets, Liabilities &amp; Net Worth (Average of 19 farms reporting)

Assets	Jan. 1	Dec. 31	Liabilities & Net Worth	Jan. 1	Dec. 31
Personal cash, checking & savings	\$ 2,226	\$ 3,470	Nonfarm Liabilities	\$ 7,861	\$ 11,876
Cash value life insurance	17,525	19,571			
Nonfarm real estate	29,053	32,605			
Auto (personal share)	5,605	6,416			
Stocks & bonds	12,396	14,324			
Household furnishings	7,579	8,632			
All other nonfarm assets	<u>0</u>	<u>0</u>			
Total Nonfarm Assets	\$ 74,384	\$ 85,018	NONFARM NET WORTH	\$ 66,523	\$ 73,142

Farm & Nonfarm Assets, Liabilities, and Net Worth<sup>6</sup>

	Jan. 1	Dec. 31
Total Assets	\$ 3,365,809	\$ 3,698,810
Total Liabilities	<u>1,688,205</u>	<u>1,687,993</u>
TOTAL FARM & NONFARM NET WORTH	\$ 1,677,604	\$ 2,010,817

<sup>6</sup>Assumes that average nonfarm assets and liabilities for the nonreporting farms were the same as for those reporting.

The following condensed balance sheet, including deferred taxes, contains average data from only those farmers who elected to provide the additional information required to compute deferred taxes. Deferred taxes represent an estimate of the taxes that would be paid if the farm were sold at year end fair market values and date on the balance sheet. Accuracy is dependent on the accuracy of the market values and the tax basis data provided. Any tax liability for assets other than livestock, machinery, land, buildings and nonfarm assets is excluded. It is assumed that all gain on purchased livestock and machinery is ordinary gain and that listed market values are net of selling costs. The effects of investment tax credit carryover and recapture, carryover of operating losses, alternative minimum taxes and other than average exemptions and deductions are excluded because they have only minor influence on the taxes of most farms. However, they could be important.

**CONDENSED BALANCE SHEET INCLUDING DEFERRED TAXES**

December 31, 1998

Average of 6 New York Dairy Farms Reporting Data, 1998

ASSETS		LIABILITIES & NET WORTH	
		Current debts & payables	\$ 110,688
		Current deferred taxes	<u>60,728</u>
Total Current Assets	\$ 198,183	Total Current Liabilities	\$ 171,416
		Intermediate debts & leases	\$ 196,519
		Intermediate deferred taxes	<u>165,443</u>
Total Intermediate Assets	\$ 703,305	Total Intermediate Liabilities	\$ 361,962
		Long term debts & leases	\$ 215,577
		Long term deferred taxes	<u>79,742</u>
Total Long Term Assets	\$ 531,142	Total Long Term Liabilities	\$ 295,319
TOTAL FARM ASSETS	\$ 1,432,630	TOTAL FARM LIABILITIES	\$ 828,697
		Farm Net Worth	\$ 603,933
		Percent Equity (Farm)	42%
		Nonfarm debts	\$ 1,250
		Nonfarm deferred taxes	<u>13,287</u>
Total Nonfarm Assets	\$ 48,538	Total Nonfarm Liabilities	\$ 14,537
TOTAL ASSETS	\$ 1,481,168	TOTAL LIABILITIES	\$ 843,234
		Total Net Worth	\$ 637,934
		Percent Equity (Total)	43%

Deferred taxes on these six farms totaled an average of \$305,913, roughly one-third of the pretax net worth. Net worth decreased from 63 percent to 43 percent when deferred taxes are included on these farms. When examining net worth, especially as a source of cash for retirement or other purposes, deferred taxes become an important consideration. Deferred taxes in this calculation specify that all assets were sold during one tax year. Therefore, tax management strategies such as making sales in more than one year or installment sales warrant careful consideration to reduce income tax liabilities.

Balance sheet analysis involves examination of relative asset and debt levels for the business. Percent equity is calculated by dividing end of year net worth by end of year assets and multiplying by 100. The debt to asset ratio is compiled by dividing liabilities by assets. Low debt to asset ratios reflect business solvency and the potential capacity to borrow. Debt levels per productive unit represent old standards that are still useful if used with measures of cash flow and repayment ability.

**BALANCE SHEET ANALYSIS**  
57 Large Herd Dairy Farms, 1998

Item	Average 57 Farms	Average Top 20% Farms
<u>Financial Ratios - Farm:</u>		
Percent equity	54%	53%
Debt/asset ratio: total	0.46	0.47
long-term	0.48	0.57
intermediate/current	0.45	0.42
Current Ratio	1.66	1.78
Working Capital: \$244,308 as % of Total Expenses	12%	17%
<u>Farm Debt Analysis:</u>		
Accounts payable as % of total debt	2%	2%
Long-term liabilities as a % of total debt	39%	43%
Current & intermediate liabilities as a % of total debt	61%	57%

	<u>Average 57 Farms</u>		<u>Average Top 20% Farms</u>	
	<u>Per Cow</u>	<u>Per Tillable Acre Owned</u>	<u>Per Cow</u>	<u>Per Tillable Acre Owned</u>
<u>Farm Debt Levels:</u>				
Total farm debt	\$ 2,703	\$2,890	\$ 2,698	\$ 3,583
Long-term debt	1,063	1,136	1,154	1,532
Long-term & intermediate	2,106	2,252	2,058	2,733
Intermediate & current debt	1,641	1,754	1,545	2,051

Farm inventory balance is an accounting of the value of assets used on the balance sheet and the changes that occur from the beginning to end of year. Changes in the livestock inventory are included in the dairy analysis. Net investment indicates whether the capital stock is being expanded (positive) or depleted (negative).

**FARM INVENTORY BALANCE**  
57 Large Herd Dairy Farms, 1998

Item	Average of 57 Farms	
	<u>Real Estate</u>	<u>Machinery &amp; Equipment</u>
Value beginning of year	\$ 1,301,495	\$ 503,460
Purchases	\$ 132,306 <sup>7</sup>	\$ 115,322
Gift/inheritance	+ 0	+ 0
Lost capital	- 39,752	
Sales	- 4,040	- 9,858
Depreciation	- <u>70,206</u>	- <u>71,228</u>
Net investment	= 18,308	= 34,237
Appreciation	+ <u>49,855</u>	+ <u>16,827</u>
Value end of year	\$ 1,369,658	\$ 554,524

<sup>7</sup>20,523 land and \$111,783 buildings and/or depreciable improvements.

**Statement of Owner Equity**

The Statement of Owner Equity has two purposes. It allows (1) verification that the accrual income statement and market value balance sheet are interrelated and consistent (in accountants terms, they reconcile) and (2) identification of the causes of change in equity that occurred on the farm during the year. The Statement of Owner Equity allows you to determine to what degree the change in equity was caused by (1) earnings from the business, and nonfarm income, in excess of withdrawals being retained in the business (called retained earnings), (2) outside capital being invested in the business or farm capital being removed from the business (called contributed/withdrawn capital) and (3) increases or decreases in the value (price) of assets owned by the business (called change in valuation equity).

Retained earnings is an excellent indicator of farm generated financial progress.

**STATEMENT OF OWNER EQUITY (RECONCILIATION)**  
57 Large Herd Dairy Farms, 1998

Item	Average 57 Farms		Average Top 20% Farms	
Beginning of year farm net worth		\$ 1,611,081		\$ 1,229,378
Net farm income w/o appreciation	\$ 375,168		\$ 516,176	
+ Nonfarm cash income	+ 7,141		+ 6,179	
- Personal withdrawals & family expenditures excluding nonfarm borrowings	- 100,310		- 99,512	
Retained Earnings		+ 281,999		+ 422,843
Nonfarm noncash transfers to farm	\$ 0		\$ 0	
+ Cash used in business from nonfarm capital	+ 9,965		+ 273	
- Note/mortgage from farm real estate sold (nonfarm)	- 0		- 0	
Contributed/Withdrawn Capital	=	+\$ 9,965	+	273
Appreciation	\$ 74,897		\$ 75,717	
- Lost capital	- 39,752		- 31,887	
Change in Valuation Equity		+\$ 35,145		+ 43,830
Imbalance/Error		- 515		- 255
End of year farm net worth <sup>8</sup>		=\$ 1,937,675		=\$ 1,696,069
Change in net worth w/apprec.		\$ 326,594		\$ 466,691
<hr/>				
<u>Change in Net Worth</u>				
Without appreciation		\$ 251,697		\$ 390,974
With appreciation		\$ 326,594		\$ 466,691

<sup>8</sup>May not add due to rounding.

**Cash Flow Statement**

Completing an annual cash flow statement is an important step in understanding the sources and uses of funds for the business. Understanding last year's cash flow is the first step toward planning and managing cash flow for the current and future years.

The annual cash flow statement is structured to show net cash provided by operating activities, investing activities, financing activities and from reserves. All cash inflows and outflows, including beginning and end balances, are included. Therefore, the sum of net cash provided from all four activities should be zero. Any imbalance is the error from incorrect accounting of cash inflows/outflows.

**ANNUAL CASH FLOW STATEMENT**  
57 Large Herd Dairy Farms, 1998

Item	Average 57 Farms	
<b><u>Cash Flow from Operating Activities</u></b>		
Cash farm receipts	\$ 2,220,239	
- Cash farm expenses	<u>1,896,235</u>	
= Net cash farm income		\$ 324,004
Personal withdrawals/family expenses including nonfarm debt payments	\$ 101,770	
- Nonfarm income	<u>7,141</u>	
- Net cash withdrawals from the farm		\$ <u>94,629</u>
= Net Provided by Operating Activities		\$ 229,375
<b><u>Cash Flow From Investing Activities</u></b>		
Sale of Assets: Machinery	\$ 9,858	
+ real estate	4,040	
+ other stock/cert.	<u>4,224</u>	
= Total asset sales		\$ 18,122
Capital purchases: expansion livestock	\$ 29,092	
+ machinery	115,322	
+ real estate	132,306	
+ other stock/cert.	<u>19,950</u>	
- Total invested in farm assets		\$ <u>296,670</u>
= Net Provided by Investment Activities		\$ -278,548
<b><u>Cash Flow From Financing Activities</u></b>		
Money borrowed (inter. & long term)	\$ 237,624	
+ Money borrowed (short-term)	8,817	
+ Increase in operating debt	17,108	
+ Cash from nonfarm cap. used in business	9,965	
+ Money borrowed - nonfarm	<u>1,460</u>	
= Cash inflow from financing		\$ 274,974
Principal payments (inter. & long-term)	\$ 221,574	
+ Principal payments (short-term)	10,680	
+ Decrease in operating debt	<u>0</u>	
- Cash outflow for financing		\$ <u>232,254</u>
= Net Provided by Financing Activities		\$ 42,720
<b><u>Cash Flow From Business</u></b>		
Beginning farm cash, checking & savings		\$ 19,943
- Ending farm cash, checking & savings		<u>12,979</u>
= Net Provided from Reserves		\$ 6,964
<b><u>Imbalance (error)</u></b>		<b>\$ 511</b>

**ANNUAL CASH FLOW STATEMENT**  
11 Top 20% Large Herd Dairy Farms, 1998

Item	Average Top 20% Farms	
<u>Cash Flow from Operating Activities</u>		
Cash farm receipts	\$ 1,953,182	
- Cash farm expenses	<u>1,587,832</u>	
= Net cash farm income		\$ 365,350
Personal withdrawals/family expenses including nonfarm debt payments	\$ 99,512	
- Nonfarm income	<u>6,179</u>	
- Net cash withdrawals from the farm		<u>\$ 93,333</u>
= Net Provided by Operating Activities		\$ 272,017
<u>Cash Flow From Investing Activities</u>		
Sale of Assets: Machinery	\$ 4,368	
+ real estate	0	
+ other stock/cert.	<u>1,942</u>	
= Total asset sales		\$ 6,310
Capital purchases: expansion livestock	\$ 59,025	
+ machinery	113,639	
+ real estate	142,558	
+ other stock/cert.	<u>18,144</u>	
- Total invested in farm assets		<u>\$ 333,366</u>
= Net Provided by Investment Activities		\$ -327,056
<u>Cash Flow From Financing Activities</u>		
Money borrowed (inter. & long term)	\$ 173,550	
+ Money borrowed (short-term)	6,313	
+ Increase in operating debt	17,216	
+ Cash from nonfarm cap. used in business	273	
+ Money borrowed - nonfarm	<u>0</u>	
= Cash inflow from financing		\$ 197,352
Principal payments (inter. & long-term)	\$ 135,758	
+ Principal payments (short-term)	3,925	
+ Decrease in operating debt	<u>0</u>	
- Cash outflow for financing		<u>\$ 139,683</u>
= Net Provided by Financing Activities		\$ 57,669
<u>Cash Flow From Business</u>		
Beginning farm cash, checking & savings		\$ 7,756
- Ending farm cash, checking & savings		<u>10,130</u>
= Net Provided from Reserves		\$ -2,374
<u>Imbalance (error)</u>		\$ 256

## Repayment Analysis

A valuable use of cash flow analysis is to compare the debt payments planned for the last year with the amount actually paid. The measures listed below provide a number of different perspectives on the repayment performance of the business. However, the critical question to many farmers and lenders is whether planned payments can be made in 1999. The cash flow projection worksheet on the next page can be used to estimate repayment ability, which can then be compared to planned 1999 debt payments shown below.

### FARM DEBT PAYMENTS PLANNED

Large Herd Dairy Farms, 1997 & 1998

Debt Payments	Same 44 Dairy Farms			Same 7 Top 20% Farms		
	1998 Payments		Planned 1999	1998 Payments		Planned 1999
	Planned	Made		Planned	Made	
Long-term	\$ 93,856	\$ 127,214	\$ 94,097	\$ 98,431	\$ 110,022	\$ 60,077
Intermediate-term	160,958	223,984	161,889	98,872	130,966	142,371
Short-term	9,691	8,513	5,030	1,857	0	6,177
Operating (net reduction)	9,251	0	4,399	9,498	0	7,143
Accounts payable (net reduction)	<u>5,987</u>	<u>20,121</u>	<u>455</u>	<u>0</u>	<u>32,367</u>	<u>0</u>
Total	\$ 279,743	\$ 379,832	\$ 265,870	\$ 208,658	\$ 273,355	\$ 215,768
Per cow	\$ 460	\$ 625		\$ 437	\$ 572	
Per cwt. 1998 milk	\$ 2.07	\$ 2.81		\$ 1.93	\$ 2.53	
Percent of total 1998 receipts	12%	16%		11%	14%	
Percent of 1998 milk receipts	13%	18%		13%	16%	

The cash flow coverage ratio and debt coverage ratio measure the ability of the farm business to meet its planned debt payments schedule. The ratios show the percentage of payments planned for 1998 (as of December 31, 1997) that could have been made with the amount available for debt service in 1998. Farmers who did not participate in DFBS in 1997 have their 1998 cash flow coverage ratio based on planned debt payments for 1999.

### COVERAGE RATIOS

Same 44 Large Herd Dairy Farms, 1997 & 1998

Item	Average	Item	Average
<u>Cash Flow Coverage Ratio</u>		<u>Debt Coverage Ratio</u>	
Cash farm receipts	\$2,212,597	Net farm income (w/o apprec.)	\$358,798
- Cash farm expenses	1,901,951	+ Depreciation	129,791
+ Interest paid (cash)	121,211	+ Interest paid (accrual)	120,590
- Net personal withdrawals from farm <sup>9</sup>	<u>96,672</u>	- Net personal withdrawals from farm <sup>9</sup>	<u>96,672</u>
(A) = Amount Available for Debt Service	\$ 335,185	(A') = Repayment Capacity	\$512,507
(B) = Debt Payments Planned for 1998 (as of December 31, 1997)	\$ 279,743	(B) = Debt Payments Planned for 1998 (as of December 31, 1997)	\$279,743
(A/B)= Cash Flow Coverage Ratio for 1998	1.20	(A'/B)= Debt Coverage Ratio for 1998	1.83
-----			
Same 7 Top 20% Dairy Farms, 1997 & 1998			
(A) = Amount Available for Debt Service	\$ 303,663	(A') = Repayment Capacity	\$577,755
(B) = Debt Payments Planned for 1998	208,658	(B) = Debt Payments Planned for 1998	208,658
(A/B)= Cash Flow Coverage Ratio for 1998	1.46	(A'/B)= Debt Coverage Ratio for 1998	2.77

<sup>9</sup>Personal withdrawals and family expenditures less nonfarm income and nonfarm money borrowed. If family withdrawals are excluded, or inaccurately included, the cash flow coverage ratio will be incorrect.

**ANNUAL CASH FLOW WORKSHEET**  
57 Large Herd Dairy Farms, 1998

Item	Average 57 Farms		Total
	Per Cow	Per Cwt.	
Number cows and cwt. milk	605	135,714	
<u>Accrual Operating Receipts</u>			
Milk	\$ 3,483	\$ 15.52	\$ 2,106,921
Dairy cattle	210	0.93	126,772
Dairy calves	23	0.10	13,735
Other livestock	3	0.01	1,701
Crops	66	0.30	40,097
Misc. receipts	88	0.39	53,205
Total	\$ 3,872	\$ 17.26	\$ 2,342,433
<u>Accrual Operating Expenses</u>			
Hired labor	\$ 551	\$ 2.46	\$ 333,613
Dairy grain & concentrate	909	4.05	549,650
Dairy roughage	47	0.21	28,337
Nondairy feed	0	0.00	8
Mach. hire/rent/lease	84	0.37	50,866
Mach. repair & farm vehicle expense	147	0.66	89,014
Fuel, oil & grease	49	0.22	29,577
Replacement livestock	45	0.20	27,169
Breeding	34	0.15	20,457
Vet & medicine	108	0.48	65,094
Milk marketing	103	0.46	62,084
Bedding	48	0.21	29,079
Milking supplies	71	0.32	42,831
Cattle lease	14	0.06	8,653
Custom boarding	43	0.19	25,930
bST expense	63	0.28	38,021
Other livestock expense	28	0.12	16,757
Fertilizer & lime	66	0.30	40,213
Seeds & plants	44	0.20	26,545
Spray/other crop expenses	53	0.24	32,145
Land, building, fence repair	58	0.26	35,141
Taxes	31	0.14	18,750
Real estate rent/lease	59	0.26	35,771
Insurance	28	0.13	17,051
Utilities	58	0.26	35,230
Miscellaneous	28	0.13	17,143
Total Less Interest Paid	\$ 2,769	\$ 12.34	\$ 1,675,128
<u>Net Accrual Operating Income</u>			
(without interest paid)	\$ 1,103	\$ 4.92	\$ 667,305
- Change in livestock/crop inventory <sup>10</sup>	140	0.63	84,924
- Change in accounts receivable	62	0.27	37,268
- Change in feed/supply inventory <sup>11</sup>	128	0.57	77,283
+ Change in accts. Payable <sup>12</sup>	-37	-0.16	-22,155
NET CASH FLOW	\$ 737	\$ 3.28	\$ 445,708
- Net personal withdrawals from farm (see footnote on p. 16)	\$ 154	\$ 0.69	\$ 93,169
Available for Farm Debt Payments & Investments	\$ 583	\$ 2.60	\$ 352,539
- Farm debt payments	612	2.73	370,278
Available for Farm Investment	\$ -29	\$ -0.13	\$ -17,739
- Capital purchases: cattle, machinery & improvements	\$ 490	\$ 2.19	\$ 296,670

<sup>10</sup>Includes change in advance government receipts.

<sup>11</sup>Includes change in prepaid expenses.

<sup>12</sup>Excludes change in interest account payable.



**ANNUAL CASH FLOW WORKSHEET**  
11 Top 20% Large Herd Dairy Farms, 1998

Item	Average Top 20% Farms		
	Per Cow	Per Cwt.	Total
No. cows or cwt. milk	534	123,168	
<u>Accrual Operating Receipts</u>			
Milk	\$ 3,544	\$ 15.37	\$ 1,892,681
Dairy cattle	262	1.14	140,150
Dairy calves	20	0.09	10,807
Other livestock	2	0.01	932
Crops	101	0.44	54,175
Misc. receipts	76	0.33	40,587
Total	\$ 4,006	\$ 17.37	\$ 2,139,333
<u>Accrual Operating Expenses</u>			
Hired labor	\$ 477	\$ 2.07	\$ 254,682
Dairy grain & concentrate	892	3.87	476,459
Dairy roughage	51	0.22	27,307
Nondairy feed	0	0.00	0
Mach. hire/rent/lease	52	0.23	27,806
Mach. repair & farm vehicle expense	104	0.45	55,276
Fuel, oil & grease	41	0.18	22,035
Replacement livestock	56	0.24	29,672
Breeding	27	0.12	14,241
Vet & medicine	104	0.45	55,611
Milk marketing	97	0.42	51,992
Bedding	40	0.17	21,423
Milking supplies	68	0.30	36,418
Cattle lease	4	0.02	2,297
Custom boarding	18	0.08	9,776
bST expense	70	0.30	37,255
Other livestock expense	30	0.13	16,260
Fertilizer & lime	48	0.21	25,762
Seeds & plants	34	0.15	18,287
Spray/other crop expenses	47	0.20	25,226
Land, building, fence repair	45	0.19	23,917
Taxes	23	0.10	12,174
Real estate rent/lease	45	0.20	24,088
Insurance	21	0.09	11,408
Utilities	48	0.21	25,810
Miscellaneous	25	0.11	13,163
Total Less Interest Paid	\$ 2,469	\$ 10.70	\$ 1,318,343
<u>Net Accrual Operating Income</u>			
(without interest paid)	\$ 1,537	\$ 6.67	\$ 820,990
- Change in livestock/crop inventory <sup>13</sup>	217	0.94	115,719
- Change in accounts receivable	132	0.57	70,432
- Change in feed/supply inventory <sup>14</sup>	254	1.10	135,845
+ Change in accounts payable <sup>15</sup>	-45	-0.19	-23,952
NET CASH FLOW	\$ 890	\$ 3.86	\$ 475,042
- Net personal withdrawals from farm(see footnote p.18)	\$ 175	\$ 0.76	\$ 93,333
Available for Farm Debt Payments & Investments	\$ 715	\$ 3.10	\$ 381,709
- Farm debt payments	501	2.17	267,520
Available for Farm Investment	\$ 214	\$ 0.93	\$ 114,189
- Capital purchases: cattle, machinery & improvements	\$ 624	\$ 2.71	\$ 333,366

<sup>13</sup>Includes change in advance government receipts.

<sup>14</sup>Includes change in prepaid expenses.

<sup>15</sup>Excludes change in interest account payable.

### Cropping Analysis

The cropping program is an important part of the dairy farm business and often represents opportunities for improved productivity and profitability. A complete evaluation of what the available land resources are, how they are being used, how well crops are producing, and what it costs to produce them is important to evaluating alternative cropping and feed purchasing alternatives.

#### LAND RESOURCES AND CROP PRODUCTION 57 Large Herd Dairy Farms, 1998

Item	Average 57 Farms			Average Top 20% Farms		
	Owned	Rented	Total	Owned	Rented	Total
Land						
Tillable	580	577	1,157	418	446	864
Nontillable	36	8	45	27	4	31
Other nontillable	167	6	173	160	3	163
Total	784	591	1,375	605	453	1,058
<b>Crop Yields</b>	<b>Farms</b>	<b>Acres<sup>16</sup></b>	<b>Prod/Acre</b>	<b>Farms</b>	<b>Acres</b>	<b>Prod/Acre</b>
Hay crop	55	486	3.86 tn DM	10	420	4.35 tn DM
Corn silage	55	525	19.81 tn	10	435	20.08 tn
Other forage	7	128	1.81 tn DM	2	55	3.45 tn DM
Total forage	55	1,027	5.10 tn DM	10	866	5.25 tn DM
Corn grain	21	238	117 bu	4	86	111 bu
Oats	3	66	60 bu	0	0	0 bu
Wheat	11	114	74 bu	0	0	0 bu
Other crops	16	128		3	140	
Tillable pasture	9	47		1	30	
Idle	9	58		3	15	
Total Tillable Acres	57	1,157		11	864	

<sup>16</sup>This column represents the average acreage for the farms producing that crop. Average acreages including those farms not producing were corn grain 88, oats 3, wheat 22, tillable pasture 7, and idle 9.

Average crop acres and yields compiled for the region are for the farms reporting each crop. Yields of forage crops have been converted to tons of dry matter using dry matter coefficients reported by the farmers. Grain production has been converted to bushels of dry grain equivalent based on dry matter information provided.

The following crop/dairy ratios indicate the relationship between forage production, forage production resources, and the dairy herd.

#### CROP/DAIRY RATIOS 57 Large Herd Dairy Farms, 1998

Item	Average 57 Farms	Average Top 20% Farms
Total tillable acres per cow	1.91	1.62
Total forage acres per cow	1.64	1.47
Harvested forage dry matter, tons per cow	8.35	7.74

**Cropping Analysis** (continued)

A number of cooperators have allocated crop expenses among the hay crop, corn, and other crops produced. Fertilizer and lime, seeds and plants, and spray and other crop expenses have been computed per acre and per production unit for hay and corn. Additional expense items such as fuels, labor, and machinery repairs are not included. Rotational grazing was not used on these farms.

**CROP RELATED ACCRUAL EXPENSES**

Large Herd Dairy Farms Reporting, 1998

Item	Total	All	Corn Silage	Corn Grain	Hay Crop	
	Per Till. Acre	Corn Per Acre	Per Ton DM	Per Dry Sh. Bu.	Per Acre	Per Ton DM
No. of farms reporting	57	10			10	
Ave. number of acres	1,157	503			426	
Fertilizer/lime	\$ 34.76	\$ 40.75	\$ 6.84	\$ 0.40	\$ 27.30	\$ 6.43
Seed/plants	22.94	29.05	4.88	0.28	18.90	4.46
Spray/other crop exp.	<u>27.78</u>	<u>46.06</u>	<u>7.73</u>	<u>0.45</u>	<u>12.70</u>	<u>3.00</u>
TOTAL	\$ 85.48	\$ 115.86	\$ 19.45	\$ 1.13	\$ 58.90	\$ 13.89
<u>Average Top 20% Farms:</u>						
No. of farms reporting	11	2			2	
Ave. number of acres	864	527			469	
Fertilizer/lime	\$ 29.82	\$ 24.30	\$ 3.34	\$ 0.20	\$ 30.69	\$ 8.67
Seeds/plants	21.17	27.23	3.75	0.23	14.21	4.01
Spray/other crop exp.	<u>29.20</u>	<u>57.76</u>	<u>7.95</u>	<u>0.48</u>	<u>18.91</u>	<u>5.34</u>
TOTAL	\$ 80.19	\$ 109.29	\$ 15.04	\$ 0.91	\$ 63.81	\$ 18.02

Most machinery costs are associated with crop production with crop production and should be analyzed with the crop enterprise. Total machinery expenses include the major fixed costs (interest and depreciation), as well as the accrual operating costs. Although machinery costs have not been allocated to individual crops, they are shown below per total tillable acre.

**ACCRUAL MACHINERY EXPENSES**

57 Large Herd Dairy Farms, 1998

Machinery Expense Item	Average 57 Farms		Average Top 20% Farms	
	Total Expenses	Per Till. Acre	Total Expenses	Per Till. Acre
Fuel, oil & grease	\$ 29,577	\$ 25.56	\$ 22,035	\$ 25.50
Mach. repairs & farm veh. exp.	89,014	76.94	55,276	63.98
Machine hire, rent & lease	50,866	43.96	27,806	32.18
Interest (5%)	29,390	25.40	26,179	30.30
Depreciation	<u>71,228</u>	<u>61.56</u>	<u>70,504</u>	<u>81.60</u>
Total	\$ 270,075	\$ 233.43	\$ 201,800	\$ 233.56

**Dairy Analysis**

Analysis of the dairy enterprise can reveal a great deal about the strengths and weaknesses of the dairy farm business. Information on this page should be used in conjunction with DHI and other dairy production information. Changes in dairy herd size and market values that occur during the year are identified in the table below. The change in inventory value without appreciation is attributed to physical changes in herd size and quality. Any change in inventory is included as an accrual farm receipt when calculating all of the profitability measures on pages 9 and 10.

**DAIRY HERD INVENTORY**  
57 Large Herd Dairy Farms, 1998

Item	Dairy Cows				Heifers		Calves	
	No.	Value	No.	Bred Value	No.	Open Value	No.	Value
<u>Average 57 Farms:</u>								
Beginning year (owned)	573	\$ 582,554	152	\$ 136,363	145	\$ 78,003	124	\$ 38,083
+ Change w/o apprec.		33,323		16,878		11,807		-1,961
+ Appreciation		<u>2,639</u>		<u>1,660</u>		<u>-455</u>		<u>1,123</u>
End year (owned)	602	\$ 618,516	171	\$ 154,901	165	\$ 89,355	119	\$ 37,245
End including leased	620							
Average number	605		453 (all age groups)					
<u>Average Top 20% Farms:</u>								
Beginning year (owned)	482	\$ 494,273	117	\$ 108,674	96	\$ 51,124	116	\$ 32,200
+ Change w/o apprec.		76,150		-748		12,351		-1,377
+ Appreciation		<u>10,130</u>		<u>3,730</u>		<u>2,296</u>		<u>1,618</u>
End of year (owned)	551	\$ 580,553	117	\$ 111,656	116	\$ 65,771	110	32,441
End including leased	555							
Average number	534		343 (all age groups)					

Total milk sold and milk sold per cow are extremely valuable measures of size and productivity, respectively, on the dairy farm. These measures of milk output are based on pounds of milk marketed during the year. Farm managers on DHI should compare milk sold per cow with their rolling herd average on the test date nearest December 31 to see how close the DHI estimate of milk produced is to actual milk sales.

**MILK PRODUCTION**  
57 Large Herd Dairy Farms, 1998

Item	Average 57 Farms	Average Top 20% Farms
Total milk sold, lbs.	13,571,369	12,316,783
Milk sold per cow, lbs.	22,424	23,061
Average milk plant test, percent butterfat	3.57 %	3.55 %

The cost of producing milk has been compiled using the whole farm method and is featured in the following table. Accrual receipts from milk sales can be compared with the accrual costs of producing milk per cow and per hundredweight of milk. Using the whole farm method, operating costs of producing milk are estimated by deducting nonmilk accrual receipts from total accrual operating expenses including expansion livestock purchased. Purchased inputs cost of producing milk are the operating costs plus depreciation. Total costs of producing milk include the operating costs of producing milk plus depreciation on machinery and buildings, the value of unpaid family labor, the value of operators' labor and management, and the interest charge for using equity capital.

**ACCRUAL RECEIPTS FROM DAIRY AND COST OF PRODUCING MILK**  
57 Large Herd Dairy Farms, 1998

Item	Average 57 Farms			Average Top 20% Farms		
	Total	Per Cow	Per Cwt.	Total	Per Cow	Per Cwt.
<u>Accrual Costs of Producing Milk</u>						
Operating costs	\$ 1,590,319	\$ 2,629	\$11.72	\$ 1,238,876	\$ 2,320	\$ 10.06
Purchased inputs costs	\$ 1,731,753	\$ 2,862	\$12.76	\$ 1,376,505	\$ 2,578	\$ 11.18
Total Costs	\$ 1,901,030	\$ 3,142	\$14.01	\$ 1,519,732	\$ 2,846	\$ 12.34
<u>Accrual Receipts From Milk</u>						
Net Milk Receipts	\$ 2,106,921	\$ 3,483	\$15.52	\$ 1,892,681	\$ 3,544	\$ 15.37
Net Farm Income	\$ 2,044,837	\$ 3,380	\$15.07	\$ 1,840,689	\$ 3,447	\$ 14.94
w/o appreciation	\$ 375,168	\$ 620	\$2.76	\$ 516,176	\$ 967	\$ 4.19
with appreciation	\$ 450,065	\$ 744	\$3.32	\$ 591,893	\$ 1,108	\$ 4.81

The accrual operating expenses most commonly associated with the dairy enterprise are listed in the table below. Evaluating these costs per unit of production enables an evaluation of the dairy enterprise.

**DAIRY RELATED ACCRUAL EXPENSES**

57 Large Herd Dairy Farms, 1998

Item	Average 57 Farms		Average Top 20% Farms	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Purchased dairy grain & concentrate	\$ 909	\$4.05	\$ 892	\$ 3.87
Purchased dairy roughage	47	0.21	51	0.22
Total Purchased Dairy Feed	\$ 955	\$4.26	\$ 943	\$ 4.09
Purchased grain & concentrate as % of milk receipts		26%		25 %
Purchased feed & crop expense	\$ 1,119	\$4.99	\$ 1,073	\$ 4.65
Purchased feed & crop expense as % of milk receipts		32%		30 %
Breeding	\$ 34	\$0.15	\$ 27	\$ 0.12
Veterinary & medicine	108	0.48	104	0.45
Milk marketing	103	0.46	97	0.42
Bedding	48	0.21	40	0.17
Milking supplies	71	0.32	68	0.30
Cattle lease	14	0.06	4	0.02
Custom boarding	43	0.19	18	0.08
bST expense	63	0.28	70	0.30
Other livestock expenses	28	0.12	30	0.13

**Cost of Producing Milk**

The cost of producing milk has been compiled below using the whole farm method. The following steps are used in the calculations.

1. The cost of expansion livestock is added to total accrual operating expenses to offset any related inventory increase included in accrual receipts.
2. Accrual milk sales are deducted from total accrual receipts to get total accrual nonmilk receipts which are used to represent total nonmilk operating costs.
3. Total accrual nonmilk receipts are subtracted from total accrual operating expenses including expansion livestock to calculate the operating costs of producing milk.
4. Machinery depreciation and building depreciation are added to operating costs to determine the purchased inputs cost of producing milk.
5. The opportunity costs of equity capital, operator's labor and operator's management and the value of unpaid family labor are added to all other costs to obtain the total costs of producing milk. This cost includes all the operating, depreciation, and imputed costs of producing milk.

**COST OF PRODUCING MILK WHOLE FARM METHOD CALCULATIONS****57 Large Herd Dairy Farms, 1998**

Item	Average 57 Farms		Average Top 20% Farms	
Total Accrual Operating Expenses	\$	1,796,346	\$	1,427,942
Expansion Livestock, Accrual	+	<u>29,485</u>	+	<u>57,586</u>
1. Total Accrual Operating Expenses, Including Expansion Livestock		\$ 1,825,831		\$ 1,485,528
Total Accrual Receipts	\$	2,342,433	\$	2,139,333
Milk Sales, Accrual	-	<u>2,106,921</u>	-	<u>1,892,681</u>
2. Total Accrual Nonmilk Receipts		- 235,512		- 246,652
3. Operating Costs of Producing Milk		\$ 1,590,319		\$ 1,238,876
Cwt. of Milk Sold	÷	135,713.7	÷	123,167.8
Operating Costs/Cwt.	=	\$11.72	=	\$10.06
Machinery Depreciation	+	71,228	+	70,504
Building Depreciation	+	<u>70,206</u>	+	<u>67,125</u>
4. Purchased Inputs Cost of Producing Milk		\$ 1,731,753		\$ 1,376,505
Cwt. of Milk Sold	÷	135,713.7	÷	123,167.8
Purchased Inputs Cost/Cwt.	=	\$12.76	=	\$11.18
Family Labor Unpaid (\$1,600/month)		+ 3,520		+ 4,000
Real Interest on Equity Cap.	+	88,719	+	73,136
Value of Operators' Labor & Management	+	<u>77,038</u>	+	<u>66,091</u>
5. Total Costs of Producing Milk		\$ 1,901,030		\$ 1,519,732
Cwt. Milk Sold	÷	135,713.7	÷	123,167.8
Total Costs/Cwt.	=	\$14.01	=	\$12.34

**Capital and Labor Efficiency Analysis**

Capital efficiency factors measure how intensively the capital is being used in the farm business. Measures of labor efficiency are key indicators of management's success in generating products per unit of labor input.

**CAPITAL EFFICIENCY**  
57 Large Herd Dairy Farms, 1998

Item	Per Worker	Per Cow	Per Tillable Acre	Per Tillable Acre Owned
<u>Average 57 Farms:</u>				
Farm capital	\$ 259,010	\$ 5,707	\$ 2,984	\$ 5,953
Real estate		2,210		2,305
Machinery & equipment	44,095	972	508	
<u>Ratios</u>				
Asset turnover ratio	Operating Expense	Interest Expense	Depreciation Expense	
0.70	0.73	0.05	0.06	
<u>Average Top 20% Farms:</u>				
Farm capital	\$ 275,047	\$ 5,501	\$ 3,400	\$ 7,028
Real estate		2,039		2,605
Machinery & equipment	49,024	980	606	
<u>Ratios</u>				
Asset turnover ratio	Operating Expense	Interest Expense	Depreciation Expense	
0.75	0.64	0.05	0.06	

**LABOR FORCE INVENTORY AND ANALYSIS**

57 Large Herd Dairy Farms, 1998

Labor Force	Months	Age	Years of Education	Value of Labor & Mgmt.		
Operator number 1	13.9	44	14	\$ 42,622		
Operator number 2	8.3	40	14	23,552		
Operator number 3	3.2	38	13	8,934		
Operator number 4	0.6	30	15	1,930		
Family paid	7.2					
Family unpaid	2.2					
Hired	<u>124.6</u>					
Total	159.9	/ 12 = 13.33 Worker Equivalent 2.04 Operator/Manager Equivalent				
<u>Average Top 20% Farms:</u>						
Total	128.1	/ 12 = 10.68 Worker Equivalent 1.65 Operator/Manager Equivalent				
<u>Operator's</u>						
Labor Efficiency	Average 57 Farms		Average Top 20% Farms			
	Total	Per Worker	Total	Per Worker		
Cows, average number	605	45	534	50		
Milk sold, pounds	13,571,369	1,018,107	12,316,783	1,153,257		
Tillable acres	1,157	87	864	81		
Work units	5,939	446	5,003	468		
<u>Labor Costs</u>						
	Average 57 Farms			Average Top 20% Farms		
	Total	Per Cow	Per Cwt.	Total	Per Cow	Per Cwt.
Value of operator(s) labor (\$1,600/mo.)	\$ 41,600	\$ 68	\$0.31	\$ 33,920	\$ 64	\$ 0.28
Family unpaid (\$1,600/mo.)	3,520	6	0.03	4,000	7	0.03
Hired	<u>333,613</u>	<u>551</u>	<u>2.46</u>	<u>254,682</u>	<u>477</u>	<u>2.07</u>
Total Labor	\$ 378,733	\$ 626	\$2.79	\$ 292,602	\$ 548	\$ 2.38
Machinery Cost	<u>270,075</u>	<u>446</u>	<u>1.99</u>	<u>201,800</u>	<u>378</u>	<u>1.64</u>
Total Labor & Mach.	\$ 648,808	\$ 1,072	\$4.78	\$ 494,402	\$ 926	\$ 4.01

## CONDENSED SUMMARY &amp; SELECTED BUSINESS FACTORS

## CONDENSED FARM BUSINESS SUMMARY FOR TWO LARGE HERD GROUPS

57 Large Herd Dairy Farms, 1998

Item	29 Farms with 300-500 Cows		28 Farms with ≥500 Cows	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
<b><u>ACCRUAL EXPENSES</u></b>				
Hired labor	\$471	\$2.19	\$589	\$2.37
Dairy grain & concentrate	853	3.98	934	4.08
Dairy roughage	57	0.27	42	0.18
Nondairy feed	0	0.00	0	0.00
Machine hire, rent & lease	63	0.29	94	0.41
Machine repairs & farm vehicle expense	158	0.74	142	0.62
Fuel, oil & grease	49	0.23	49	0.21
Replacement livestock	64	0.30	36	0.16
Breeding	36	0.17	33	0.14
Veterinary & medicine	112	0.52	105	0.46
Milk marketing	125	0.58	92	0.40
Bedding	42	0.20	51	0.22
Milking supplies	67	0.31	73	0.32
Cattle lease & rent	2	0.01	20	0.09
Custom boarding	24	0.11	52	0.23
bST expense	51	0.24	68	0.30
Other livestock expense	46	0.21	19	0.08
Fertilizer & lime	68	0.32	66	0.29
Seeds & plants	47	0.22	43	0.19
Spray & other crop expense	62	0.29	49	0.21
Land, building & fence repair	57	0.27	59	0.26
Taxes & rent	77	0.36	96	0.42
Utilities	59	0.27	58	0.25
Interest paid	230	1.07	187	0.82
Misc. (including insurance)	57	0.27	56	0.24
Total Operating Expenses	\$2,878	\$13.41	\$3,012	\$13.16
Expansion livestock	73	0.34	37	0.16
Machinery depreciation	134	0.62	110	0.48
Building depreciation	105	0.49	121	0.53
Total Accrual Expenses	\$3,190	\$14.87	\$3,281	\$14.33
<b><u>ACCRUAL RECEIPTS</u></b>				
Milk sales	\$3,391	\$15.81	\$3,525	\$15.40
Dairy cattle	238	1.11	196	0.86
Dairy calves	25	0.12	22	0.09
Other livestock	6	0.03	1	0.01
Crops	88	0.41	56	0.25
Miscellaneous receipts	88	0.41	88	0.38
Total Accrual Receipts	\$3,837	\$17.88	\$3,889	\$16.99
<b><u>PROFITABILITY ANALYSIS (Total)</u></b>				
Net farm income (without appreciation)	\$243,251		\$511,797	
Net farm income (with appreciation)	\$295,619		\$610,028	
Labor & management income	\$179,644		\$390,018	
Number of operators	1.82		2.26	
Labor & management income/operator	\$98,705		\$172,574	
Rates of return on:	Equity capital w/o apprec.	15.2%	Equity capital w/ apprec.	17.3%
	Equity capital w/ apprec.	19.6%	All capital w/o apprec.	21.4%
	All capital w/o apprec.	11.7%	All capital w/ apprec.	12.2%
	All capital w/ apprec.	14.0%		14.3%



**SELECTED BUSINESS FACTORS FOR TWO LARGE HERD GROUPS**

57 Large Herd Dairy Farms, 1998

Item	29 Farms with 300-500 Cows	28 Farms with ≥ 500 Cows
<u>Cropping Program Analysis</u>		
Total Tillable acres	796	1,531
Tillable acres rented <sup>17</sup>	387	774
Hay crop acres <sup>17</sup>	332	610
Corn silage acres <sup>17</sup>	322	698
Hay crop, tons DM/acre	3.4	4.1
Corn silage, tons/acre	18.2	20.6
Forage DM per cow, tons	8.0	8.5
Tillable acres/cow	2.1	1.8
Fertilizer & lime expense/tillable acre	\$32.21	\$36.13
Machinery cost/tillable acre	\$216	\$243
<u>Dairy Analysis</u>		
Number of cows	376	842
Number of heifers	263	650
Milk sold, lbs.	8,066,276	19,273,073
Milk sold/cow, lbs.	21,431	22,883
Operating cost of prod. milk/cwt.	\$11.68	\$11.73
Total cost of prod. milk/cwt.	\$14.32	\$13.87
Price/cwt. milk sold	\$15.81	\$15.40
Purchased dairy feed/cow	\$911	\$976
Purchased dairy feed/cwt. milk	\$4.24	\$4.26
Purchased grain & concentrate as % of milk receipts	25%	27%
Purchased feed & crop expense/cwt. milk	\$5.07	\$4.95
<u>Capital Efficiency</u>		
Farm capital/worker	\$254,084	\$261,663
Farm capital/cow	\$6,028	\$5,560
Real estate/cow	\$2,416	\$2,115
Machinery investment/cow	\$1,069	\$927
Asset turnover ratio	0.66	0.72
<u>Labor Efficiency</u>		
Worker equivalent	8.92	17.89
Operator/manager equivalent	1.82	2.26
Milk sold/worker, lbs.	904,291	1,077,310
Cows/worker	42	47
Labor cost/cow	\$583	\$645
<u>Financial Measures</u>		
Percent equity	54%	54%
Debt/asset ratio - long term	0.46	0.49
Debt/asset ratio - intermediate & current	0.47	0.45
Change in net worth with appreciation	\$217,379	\$439,713
Total farm debt per cow	\$2,824	\$2,640
Debt payments made per cow	\$685	\$594
Debt payments as % of milk sales	20%	17%
Amount available for debt service	\$215,823	\$478,419
Cash flow coverage ratio for 1998	1.13	1.24

<sup>17</sup>Average of all farms, not only those reporting data.

### INCOME AND EXPENSE PROFILE

Use two of the following four tables to make an income and expense profile for your dairy farm business. The first two tables represent farms with 300 to 500 cows. The second two tables are of farms with 500 or more cows. The figures in the quintile columns represent the average of the top 20 percent to the bottom 20 percent for each receipt and expenditure category. Each line is computed independently. The farms that comprise the top 20 percent in milk sales do not necessarily make up the top 20 percent of any other category. On each line circle the income and cost measures closest to the one for your farm. Then draw a vertical line connecting your circles on each table. The strongest profile will be a relatively straight line on the left side of the table.

#### RECEIPTS AND EXPENSES PER COW 29 Large Herd Dairy Farms with 300 – 500 Cows, 1998

Item	QUINTILE				
	1	2	3	4	5
<u>Accrual Operating Receipts</u>					
Milk	\$4,024	\$3,569	\$3,433	\$3,218	\$2,873
Dairy cattle	500	304	212	152	85
Dairy calves	56	29	18	16	11
Other livestock	34	5	0	0	-6
Crops	264	155	76	22	-46
Misc. receipts	203	115	70	50	28
Total Operating Receipts	\$4,719	\$4,126	\$3,786	\$3,526	\$3,251
<u>Accrual Operating Expenses</u>					
Hired labor	\$268	\$393	\$450	\$557	\$733
Dairy grain & concentrate	608	757	892	947	1,090
Dairy roughage	0	4	25	61	250
Nondairy feed	0	0	0	0	0
Mach. hire/rent/lease	0	3	44	89	201
Mach. repair & farm veh. exp.	65	120	151	195	277
Fuel, oil & grease	28	38	50	60	76
Replacement livestock	0	0	21	100	233
Breeding	9	24	35	45	72
Vet & medicine	66	83	109	133	180
Milk marketing	80	107	119	128	216
Bedding	13	29	34	53	86
Milking supplies	30	44	61	84	126
Cattle lease	0	0	0	0	12
Custom boarding	0	0	0	21	122
bST expense	2	37	62	80	87
Other livestock expense	10	19	31	51	135
Fertilizer & lime	15	48	66	86	145
Seeds & plants	9	35	49	59	88
Spray/other crop expenses	13	44	60	76	125
Land, building, fence repair	7	26	46	73	146
Taxes	11	22	30	42	61
Real estate rent/lease	9	22	39	62	99
Insurance	19	26	29	35	61
Utilities	38	48	58	67	90
Interest	135	178	229	280	337
Miscellaneous	4	15	20	28	50
Total Operating Expenses	\$2,440	\$2,644	\$2,863	\$3,038	\$3,530
Expansion Livestock	0	0	15	105	302
Machinery Depreciation	50	93	112	155	268
Building Depreciation	36	73	98	139	183
Net Farm Income w/o Apprec.	\$1,223	\$807	\$624	\$481	\$260

**RECEIPTS AND EXPENSES PER CWT. OF MILK SOLD**  
29 Large Herd Dairy Farms With 300 – 500 Cows, 1998

Item	QUINTILE				
	1	2	3	4	5
<u>Accrual Operating Receipts</u>					
Milk	\$17.39	\$16.16	\$15.67	\$15.34	\$14.98
Dairy cattle	2.22	1.44	1.02	.70	.41
Dairy calves	.27	.14	.09	.07	.05
Other livestock	.17	.02	.00	.00	-.03
Crops	1.18	.71	.39	.10	-.26
Misc. receipts	.97	.56	.32	.23	.13
Total Operating Receipts	\$20.59	\$18.36	\$17.73	\$17.22	\$16.28
<u>Accrual Operating Expenses</u>					
Hired labor	\$1.23	\$1.84	\$2.23	\$2.65	\$3.19
Dairy grain & concentrate	2.79	3.71	4.24	4.48	4.77
Dairy roughage	.00	.03	.11	.29	1.16
Nondairy feed	.00	.00	.00	.00	.02
Mach. hire/rent/lease	.00	.01	.23	.41	.97
Mach. repair & farm veh. exp.	.32	.54	.72	.92	1.27
Fuel, oil & grease	.14	.17	.24	.27	.34
Replacement livestock	.00	.00	.10	.48	1.09
Breeding	.04	.11	.17	.21	.35
Vet & medicine	.28	.40	.56	.65	.81
Milk marketing	.35	.50	.56	.66	.97
Bedding	.07	.14	.18	.23	.38
Milking supplies	.15	.21	.30	.37	.54
Cattle lease	.00	.00	.00	.00	.07
Custom boarding	.00	.00	.00	.10	.57
bST expense	.01	.18	.31	.36	.37
Other livestock expense	.05	.09	.14	.25	.59
Fertilizer & lime	.07	.23	.30	.42	.66
Seeds & plants	.04	.17	.23	.29	.38
Spray/other crop expenses	.06	.20	.28	.36	.59
Land, building, fence repair	.04	.12	.20	.34	.66
Taxes	.05	.10	.14	.21	.28
Real estate rent/lease	.04	.11	.18	.30	.48
Insurance	.09	.12	.14	.16	.30
Utilities	.19	.22	.25	.34	.40
Interest	.58	.82	1.11	1.40	1.59
Miscellaneous	.02	.07	.09	.14	.24
Total Operating Expenses	\$11.30	\$13.00	\$13.62	\$14.40	\$15.36
Expansion Livestock	.00	.00	.07	.47	1.36
Machinery Depreciation	.24	.42	.54	.77	1.21
Building Depreciation	.17	.34	.47	.64	.88
Net Farm Income w/o Apprec.	\$5.29	\$3.80	\$2.87	\$2.29	\$1.29

**RECEIPTS AND EXPENSES PER COW**  
28 Large Herd Dairy Farms With 500 Or More Cows, 1998

Item	QUINTILE				
	1	2	3	4	5
<u>Accrual Operating Receipts</u>					
Milk	3,901	3,686	\$3,530	\$3,354	\$3,242
Dairy cattle	372	272	204	143	86
Dairy calves	57	24	20	16	11
Other livestock	8	3	1	0	-6
Crops	226	133	61	-6	-72
Misc. receipts	97	88	73	62	33
Total Operating Receipts	\$4,398	\$4,137	\$3,906	\$3,674	\$3,539
<u>Accrual Operating Expenses</u>					
Hired labor	\$423	\$518	\$573	\$641	\$729
Dairy grain & concentrate	748	892	951	1,017	1,116
Dairy roughage	0	1	18	69	133
Nondairy feed	0	0	0	0	0
Mach. hire/rent/lease	7	28	66	138	243
Mach. repair & farm veh. exp.	85	110	140	170	256
Fuel, oil & grease	33	41	50	58	80
Replacement livestock	0	1	7	41	142
Breeding	16	25	34	44	62
Vet & medicine	81	92	103	121	151
Milk marketing	59	84	98	109	138
Bedding	21	33	46	57	86
Milking supplies	31	54	76	87	131
Cattle lease	0	0	0	9	73
Custom boarding	0	0	11	59	177
bST expense	26	62	77	85	96
Other livestock expense	1	10	19	29	54
Fertilizer & lime	22	44	67	99	151
Seeds & plants	21	33	44	51	75
Spray/other crop expenses	14	40	50	63	86
Land, building, fence repair	20	32	49	78	126
Taxes	12	23	28	37	53
Real estate rent/lease	29	46	59	76	137
Insurance	14	22	25	32	44
Utilities	34	46	57	76	98
Interest	85	169	197	250	294
Miscellaneous	12	21	28	37	67
Total Operating Expenses	\$2,685	\$2,877	\$2,984	\$3,147	\$3,432
Expansion Livestock	0	0	8	83	149
Machinery Depreciation	44	79	122	154	229
Building Depreciation	29	76	130	172	237
Net Farm Income w/o Apprec.	\$1,045	\$764	\$560	\$466	\$327

**RECEIPTS AND EXPENSES PER CWT. OF MILK SOLD**  
28 Large Herd Dairy Farms With 500 Or More Cows, 1998

Item	QUINTILE				
	1	2	3	4	5
<u>Accrual Operating Receipts</u>					
Milk	\$16.25	\$15.64	\$15.49	\$15.18	\$14.65
Dairy cattle	1.59	1.14	.91	.64	.38
Dairy calves	.26	.10	.09	.07	.05
Other livestock	.03	.01	.00	.00	-.03
Crops	.97	.59	.27	.02	-.30
Misc. receipts	.87	.38	.33	.28	.14
<b>Total Operating Receipts</b>	<b>\$18.48</b>	<b>\$17.56</b>	<b>\$16.98</b>	<b>\$16.65</b>	<b>\$16.00</b>
<u>Accrual Operating Expenses</u>					
Hired labor	\$1.83	\$2.23	\$2.56	\$2.88	\$3.15
Dairy grain & concentrate	3.32	3.94	4.20	4.45	4.71
Dairy roughage	.00	.00	.08	.31	.58
Nondairy feed	.00	.00	.00	.00	.00
Mach. hire/rent/lease	.03	.12	.28	.64	1.04
Mach. repair & farm veh. exp.	.37	.49	.61	.73	1.12
Fuel, oil & grease	.15	.18	.22	.26	.36
Replacement livestock	.00	.00	.03	.18	.61
Breeding	.07	.11	.15	.19	.27
Vet & medicine	.36	.40	.46	.53	.65
Milk marketing	.26	.37	.43	.47	.61
Bedding	.09	.15	.21	.25	.37
Milking supplies	.14	.24	.34	.38	.54
Cattle lease	.00	.00	.00	.04	.31
Custom boarding	.00	.00	.05	.26	.78
bST expense	.12	.27	.33	.37	.41
Other livestock expense	.01	.05	.08	.13	.25
Fertilizer & lime	.10	.19	.30	.43	.66
Seeds & plants	.09	.15	.20	.22	.32
Spray/other crop expenses	.06	.18	.22	.28	.37
Land, building, fence repair	.08	.14	.22	.33	.55
Taxes	.05	.10	.12	.16	.23
Real estate rent/lease	.13	.20	.26	.33	.62
Insurance	.06	.10	.11	.14	.20
Utilities	.15	.20	.25	.33	.44
Interest	.38	.72	.85	1.12	1.31
Miscellaneous	.05	.09	.12	.16	.29
<b>Total Operating Expenses</b>	<b>\$11.75</b>	<b>\$12.82</b>	<b>\$13.27</b>	<b>\$13.72</b>	<b>\$14.52</b>
Expansion Livestock	.00	.00	.03	.35	.65
Machinery Depreciation	.20	.36	.51	.69	.98
Building Depreciation	.13	.35	.56	.73	1.00
<b>Net Farm Income w/o Apprec.</b>	<b>\$4.50</b>	<b>\$3.26</b>	<b>\$2.48</b>	<b>\$2.11</b>	<b>\$1.43</b>

### FARM BUSINESS CHART

The Farm Business chart is a tool which can be used in analyzing your business. Compare your business by drawing a line through or near the figure in each column which represents your current level of performance. The five figures in each column represent the average of each 20 percent or quintile of farms included in this summary. Each column of the chart is independent of the others. The farms which are in the top 20 percent for one factor would not necessarily be the same farms which make up the 20 percent for any other factor. Use this information to identify business areas where more challenging goals are needed.

#### FARM BUSINESS CHART FOR FARM MANAGEMENT COOPERATORS

57 Large Herd Dairy Farms, 1998

Worker Equivalent	Size of Business		Rates of Production			Labor Efficiency	
	Number 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
(11) <sup>18</sup>	(11)	(11)	(10)	(9)	(9)	(11)	(11)
25.0	1,220	27,923,349	25,034	5.7	29	61	1,340,243
14.8	643	14,800,588	23,509	4.3	20	51	1,134,921
11.4	494	10,828,751	22,253	3.6	19	45	998,914
9.6	381	8,484,429	21,504	3.2	17	42	897,424
6.8	332	6,889,612	19,014	2.5	14	33	731,210

#### 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
(10)	(10)	(11)	(11)	(10)	(10)
\$659	20%	\$287	\$783	\$909	\$4.22
835	24	404	994	1,048	4.76
917	27	459	1,088	1,098	5.03
975	29	516	1,174	1,176	5.36
1,104	30	634	1,319	1,370	5.93

Hired Labor Expense			Expenses Per Cwt.		
Per Cwt.	Per Hired Worker Equiv.	As % of Milk Sales	Milk Marketing	Veterinary & Medicine	Other Livestock
(11)	(CALC)	(CALC)	(10)	(10)	(10)
\$1.44	\$22,095	9%	\$0.29	\$0.32	\$0.02
2.09	25,801	13	0.41	0.40	0.07
2.39	28,546	15	0.48	0.49	0.11
2.73	31,442	18	0.55	0.58	0.18
3.16	36,972	21	0.84	0.74	0.43

<sup>18</sup> ( ) = page number of the participant's DFBS where factor is located.

CALC=Need to calculate for each farm; refer to the Glossary for definition.

Cost Control (con't)					
Machinery & Crop Expense		Operating Cost		Total Cost	
Per Tillable Acre	Per Ton Dry Matter	Per Cow	Per Cwt.	Per Cow	Per Cwt.
(CALC)	(CALC)	(10)	(10)	(10)	(10)
\$204	\$42	\$2,128	\$9.78	\$2,648	\$12.28
275	64	2,442	11.20	2,943	13.64
323	74	2,590	11.90	3,141	14.16
360	87	2,782	12.38	3,319	14.62
457	114	3,045	13.47	3,638	16.22

Expense Ratios		
Operating	Depreciation	Interest
(11)	(11)	(11)
63%	3%	3%
69	4	5
73	6	5
76	8	7
81	10	9

Income Generation				
Milk Receipts Per Cwt.	Net Milk Receipts Per Cwt.	Milk Receipts Per Cow	Dairy Cattle Sales Per Cow	Dairy Calf Sales Per Cow
(10)	(10)	(10)	(10)	(10)
\$16.84	\$16.11	\$3,949	\$433	\$55
15.85	15.37	3,609	274	25
15.51	15.10	3,467	207	19
15.27	14.80	3,312	149	16
14.80	14.36	3,028	83	11

Debt Management				
Farm Debt Per Cow		Cost of Borrowed Capital	Planned Debt Payments	
Total	Intermediate & Long Term		Per Cow	Per Cwt.
(5)	(5)	(CALC)	(8)	(8)
\$1,650	\$1,189	4.6%	\$297	\$1.28
2,392	1,799	6.2	374	1.69
2,767	2,167	6.7	454	2.04
3,137	2,451	7.4	564	2.71
3,888	3,366	8.2	782	3.65

Cash Flow Analysis				
Amount Available for Family Living, Debt Service & Investment		Personal Withdrawals & Family Expenditures		Cash Flow Coverage Ratio
Per Cow	Per Cwt.	Per Cow	Per Cwt.	Ratio
(Optional Page 12)		(CALC)	(CALC)	(8)
\$1,085	\$4.69	\$315	\$1.39	2.21
830	3.74	196	0.90	1.34
728	3.38	147	0.65	1.18
638	2.98	108	0.51	0.97
466	2.10	59	0.26	0.77

Capital Efficiency				
Farm Capital Per Cow	Real Estate Investment Per Cow	Machinery Investment Per Cow	Total Labor Cost Per Worker Equivalent	Asset Turnover Ratio
(11)	(11)	(11)	(CALC)	(11)
\$4,399	\$1,294	\$562	\$21,367	0.90
5,220	1,869	834	24,154	0.77
5,792	2,207	1,025	26,711	0.71
6,376	2,535	1,186	29,093	0.64
7,610	3,562	1,555	34,332	0.54

Solvency				
Percent Equity	Leverage Ratio	Debt to Asset Ratios		
(5)	(CALC)	Total (5)	Current/Intermed. (5)	Long Term (5)
73%	0.27	0.27	0.27	0.10
61	0.40	0.40	0.39	0.37
54	0.48	0.48	0.45	0.49
46	0.55	0.55	0.55	0.65
32	0.69	0.69	0.68	0.92

Profitability				
Labor and Mgmt. Income Per Operator	Rate Return to Equity Capital		Rate Return to All Capital	
	Without Appreciation	With Appreciation	Without Appreciation	With Appreciation
(3)	(3)	(3)	(3)	(3)
\$410,142	40.3%	49.7%	19.5%	22.0%
195,924	22.9	28.5	13.7	15.9
141,893	17.1	21.3	12.3	14.4
96,351	13.6	17.3	10.7	12.8
31,928	5.1	9.5	6.0	8.4

Profitability, Continued				
Net Farm Income Without Appreciation		Net Farm Income From Operations	Net Income Efficiency	
Per Cow	Per Cwt.	Ratio	Ratio	
(10)	(10)	(CALC)	(CALC)	
\$1,114	\$4.93	26.3%	25.6%	
765	3.39	19.2	17.7	
589	2.63	15.5	12.6	
470	2.17	12.7	9.4	
294	1.35	7.9	5.7	



**IDENTIFY AND SET GOALS**

If businesses are to be successful, they must have direction. Written goals help provide businesses with an identifiable direction over both the long and short term. Goal setting is as important on a dairy farm as it is in other businesses. Written goals are a tool which farm operators can use to ensure that the business continues to move in the proper direction. Goals should be SMART:

1. Goals should be Specific.
2. Goals should be Measurable.
3. Goals should be Achievable but challenging.
4. Goals should be Rewarding.
5. Goals should designate a Time when each goal will be achieved.

Goal setting on a dairy farm does not have to be a complex process. In many cases it provides a process for writing down and agreeing on goals that you have already given some thought to. It is also important to remember that once you write out your goals they are not cast in concrete. If a change takes place which has a major impact on the farm business, the goals should be reworked to accommodate that change. Refer to your goals as often as necessary to keep the farm business progressing.

It is important to identify both objectives (long-range) and goals (short-range) when looking at the future of your farm business.

A suggested format for writing out your goals is as follows:

- a. Begin with a mission statement which describes why the business exists based on the preferences and values of the owners.
- b. Identify 4-6 objectives.
- c. Identify SMART goals.

Worksheet for Setting Goals

I. Mission and Objectives

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## GLOSSARY AND LOCATION OF COMMON TERMS

Some of the following definitions include formulas for calculating the factor being described. Page references to the individual Dairy Farm Business Summary are provided in parentheses for ease of calculation for your farm.

**Accounts Payable** - Open accounts or bills owed to feed and supply firms, cattle dealers, veterinarians and other providers of farm services and supplies.

**Accounts Receivable** - Outstanding receipts from items sold or sales proceeds not yet received, such as the payment for December milk sales received in January.

**Accrual Expenses** - (defined on page 8).

**Accrual Receipts** - (defined on page 8).

**Annual Cash Flow Statement** - (defined on page 16).

**Appreciation** - (defined on page 9).

**Asset Turnover Ratio** - The ratio of total farm income to total farm assets, calculated by dividing total accrual operating receipts plus appreciation by average total farm assets.

**Balance Sheet** - A "snapshot" of the business financial position at a given point in time, usually December 31. The balance sheet equates the value of assets to liabilities plus net worth.

**Capital Efficiency** - The amount of capital invested per production unit. Relatively high investments per worker with low to moderate investments per cow imply efficient use of capital.

**Cash From Nonfarm Capital Used in the Business** - Transfers of money from nonfarm savings or investments to the farm business where it is used to pay operating expenses, make debt payments and/or capital purchases.

**Cash Flow Coverage Ratio** - (defined on page 18).

**Cash Paid** - (defined on page 6).

**Cash Receipts** - (defined on page 8).

**Change in Accounts Payable** - (defined on page 8).

**Change in Accounts Receivable** - (defined on page 8).

**Change in Inventory** - (defined on page 6).

**Cost of Borrowed Capital** - A weighted average of the cost of borrowed capital to the farm. Calculate by multiplying end of year principal of each loan that is borrowed by the interest rate for each loan at that time. Add up each amount that is calculated for each loan and then divide by total amount of borrowed funds. Do not include accounts payable. This information is found on pages 8 & 9 of the data entry form.

**Cows per Worker Equivalent for the Dairy Enterprise** - Determined by dividing the average number of milking and dry cows by the number of worker equivalents in the dairy enterprise.

**Culling Rate** - Culling rate is calculated by dividing the number of animals that left the herd for culling purposes and that died by the average number of milking and dry cows for the year.

**Current Portion** - (defined on page 11).

**Dairy (farm)** - A farm business where dairy farming is the primary enterprise, operating and managing this farm is a full-time occupation for one or more people and cropland is owned.

**Debt Per Cow** - Total end-of-year debt divided by end-of-year number of cows.

**Debt to Asset Ratios** - (defined on page 12).

**Deferred Taxes** - (defined on page 11).

**Depreciation Expense Ratio** - The percentage of Total Accrual Receipts that is charged to depreciation expense. Machinery Depreciation (DFBS p. 2) plus Building Depreciation (p. 2) divided by Total Accrual Receipts (p. 3) times 100.

**Dry Matter** - The amount or proportion of dry material that remains after all water is removed. Commonly used to measure dry matter percent and tons of dry matter in feed.

**Equity Capital** - The farm operator/manager's owned capital or farm net worth.

**Expansion Livestock** - Purchased dairy cattle and other livestock that cause an increase in herd size from the beginning to the end of the year.

**Farm Debt Payments as Percent of Milk Sales** - Amount of milk income committed to debt repayment, calculated by dividing planned debt payments by total milk receipts. A reliable measure of repayment ability, see page 18.

**Farm Debt Payments Per Cow** - Planned or scheduled debt payments per cow represent the repayment plan scheduled at the beginning of the year divided by the average number of cows for the year. This measure of repayment ability is used in the Financial Analysis Chart.

**Financial Lease** - A long-term non-cancellable contract giving the lessee use of an asset in exchange for a series of lease payments. The term of a financial lease usually covers a major portion of the economic life of the asset. The lease is a substitute for purchase. The lessor retains ownership of the asset.

**Hired Labor Expense per Hired Worker Equivalent** - The total cost to the farm per hired worker equivalent. Divide accrual hired labor expense (p. 2) by number of hired plus family paid worker equivalents (p. 11).

**Hired Labor Expense as % of Milk Sales** - The percentage of the gross milk receipts that is used for labor expense. Divide accrual hired labor expense (p. 2) by accrual milk sales (p. 3).

**Income Statement** - A complete and accurate account of farm business receipts and expenses used to measure profitability over a period of time such as one year or one month.

**Interest Expense Ratio** - The percentage of Total Accrual Receipts that is used for interest expense. Total Accrual Interest (p. 2) divided by Total Accrual Receipts (p. 3) times 100.

**Labor and Management Income** - (defined on page 10).

**Labor and Management Income Per Operator** - The return to the owner/manager's labor and management per full-time operator.

**Labor Efficiency** - Production capacity and output per worker.

**Leverage Ratio** - Dollars of debt per dollar of equity, computed by dividing total liabilities by total equity.

**Liquidity** - Ability of business to generate cash to make debt payments or to convert assets to cash.

**Machinery & Crop Expenses per Tillable Acre** - A measure of the cost to produce crops on a tillable acre basis. Add total crop expenses (p. 2) and total machinery expenses (p. 9), then divide by number of tillable acres, owned & rented (p. 9).

**Machinery & Crop Expense per Ton Dry Matter** - A measure of the cost per ton of DM to produce a crop. It is not a measure of total costs to produce feed. Add total crop expenses (p. 2) and total machinery expenses (p. 9), then divide by total forage, production, tons DM (p. 9).

**Milk Harvested per Machine** – Calculated by dividing the total pounds of milk produced for the year by the number of milking machines in the milking center.

**Milk Pounds Produced per Labor Hour** – Calculated by dividing the total pounds milk produced by the total number of labor hours used to operate the milking center for 1 year. The total number of labor hours is estimated by multiplying the number of hours to operate the milking center for one day, which was provided by the participating dairies, by 365. Operating the milking center includes setting up, milking, and washing down the milking center, but doesn't include time spent to bring cows to and from the milking center.

**Milk Sold per Worker Equivalent for the Dairy Enterprise** – Determined by dividing the total amount of milk produced in the year by the number of worker equivalents in the dairy enterprise

**Net Farm Income** - (defined on page 9).

**Net Farm Income from Operations Ratio** - The percentage of each gross dollar that is generated that is net farm income. Net Farm Income without Appreciation (p. 3) divided by Total Accrual Receipts (p. 3) times 100.

**Net Farm Income without Appreciation per Cwt.** - The amount of net farm income, without appreciation, per cwt., that the farm generated. Divide net farm income without appreciation (p. 3) by number of cwt. of milk sold, which is total milk sold (p. 10) divided by 100.

**Net Farm Income without Appreciation per Cow** - The amount of net farm income, without appreciation, per cow that the farm generated. Divide net farm income without appreciation (p. 3) by average number of cows for the year (p. 10).

**Net Income Efficiency Ratio** - A measure of how efficiently the business is in generating net income, taking into account the differences in number of operators, debt levels, and amount of unpaid family labor being used on a farm. Net farm income without appreciation minus unpaid family labor charge (p. 3), plus Accrual Interest Paid (p. 2), divided by number of operators (p. 3), divided by Total Accrual Receipts (p. 3) times 100.

**Net Milk Receipts per Cwt.** - The mail box price received by farmers before any farmer authorized assignments or deductions. Accrual Receipts from milk, per cwt. (p. 10) minus accrual milk marketing expense per cwt. (p. 10).

**Net Worth** - The value of assets less liabilities equal net worth. It is the equity the owner has in owned assets.

**Operating Costs of Producing Milk** - (defined on page 24).

**Operating Expense Ratio** - The percentage of Total Accrual Receipts that is used for operating expenses, excluding interest & depreciation. Total Accrual Expenses (p. 2) minus Machinery Depreciation (p. 2), minus Building Depreciation (p. 2), minus Accrual Interest Expense (p. 2), divided by Total Accrual Receipts (p. 3) times 100.

**Opportunity Costs** - The cost or charge made for using a resource based on its value in its most likely alternative use. The opportunity cost of a farmer's labor and management is the value he/she would receive if employed in his/her most qualified alternative position.

**Other Livestock Expenses** - All other dairy herd and livestock expenses not included in more specific categories. Other livestock expenses include; bedding, DHIC, milk house and parlor supplies, livestock board, registration fees and transfers.

**Percent Herd on bST** – Calculated by taking the accrual bST expense for the year and dividing by an average price of \$5.25 per dose, then dividing by 26, then dividing by the average number of milking and dry cows in the herd.

**Personal Withdrawals and Family Expenditures Including Nonfarm Debt Payments** - All the money removed from the farm business for personal or nonfarm use including family living expenses, health and life insurance, income taxes, nonfarm debt payments, and investments.

**Personal Withdrawals & Family Expenditures per Cwt.** - The amount of money on a per cwt. basis that the family uses for family living and personal expenses. This is the total amount, per cwt., used by the family, including farm and nonfarm income. Personal withdrawals/family expense, including nonfarm debt payments (p. 7) divided by pounds milk sold (p. 10) divided by 100.

**Personal Withdrawals & Family Expenditures per Cow** - The amount of money on a per cow basis that the family used for family living and personal expenses. This is the total amount, per cow, used by the family, including farm and nonfarm income. Personal withdrawals/family expense, including nonfarm debt payments (p. 7) divided by average number of cows (p. 10).

**Profitability** - The return or net income the owner/manager receives for using one or more of his or her resources in the farm business. True "economic profit" is what remains after deducting all the costs including the opportunity costs of the owner/manager's labor, management, and equity capital.

**Purchased Inputs Cost of Producing Milk** - (defined on page 24).

**Repayment Analysis** - an evaluation of the business' ability to make planned debt payments.

**Replacement Livestock** - Dairy cattle and other livestock purchased to replace those that were culled or sold from the herd during the year.

**Return on Equity Capital** - (defined on page 11).

**Return on Total Capital** - (defined on page 11).

**Solvency** - The extent or ability of assets to cover or pay liabilities. Debt/asset and leverage ratios are common measure of solvency.

**Total Costs of Producing Milk** - (defined on page 24).

**Total Cows by Labor Hour Milking** – Determined by dividing the average number of milking and dry cows by the labor hours required to operate the milking center for a one day period.

**Total Labor Costs per Worker Equivalent, All Labor** - The average cost per worker equivalent when considering all labor (hired, paid family, family non-paid, and operators) used on the farm and total costs for this labor. Total Labor Cost (p. 11) divided by number of worker equivalents (p. 11).

**Whole Farm Method** - A procedure used to calculate costs of producing milk on dairy farms without using enterprise cost accounts. All non-milk receipts are assigned a cost equal to their sale value and deducted from total farm expenses to determine the costs of producing milk.

**Worker Equivalents for the Dairy Enterprise** – Determined by the farmer estimating how many of hours of labor are spent in the milking center and dairy complex performing all routine tasks. Labor spent in the field or in the dairy replacement enterprise is excluded. The daily labor estimate is multiplied by 365 days and then divided by 2,760 hours to get the number of worker equivalents.

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