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DAIRY FARM BUSINESS SUMMARY

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INTENSIVE GRAZING FARMS NEW YORK 1999



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1999 DAIRY FARM BUSINESS SUMMARY
Intensive Grazing Farms
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This report was written by the Intensive Grazing Committee consisting of George Conneman, Professor, Farm Management; Sheila Marshman, Extension Specialist, Chemung, Cortland, Schuyler, Tioga and Tompkins Counties; Jason Karszes, Senior Extension Associate, PRO-DAIRY; James Grace, Extension Educator, Allegany and Steuben Counties; Ed Staehr, Extension Educator, Onondaga County; Bill Casey, Extension Educator, Cortland County; Janice Degni, Extension Specialist, Chemung, Cortland, Schuyler, Tioga and Tompkins Counties; Stephanie Schosek, Cornell University student; and Linda Putnam, Extension Support Specialist, Farm Management. Faye Butts prepared and distributed the publication. The committee appreciates the assistance from the following Extension Educators that collected the grazing practices survey data: Karen Baase, Doug Bowne, Steve Hadcock, Jackie Hiltz, Mariane Kiraly, Zaid Kurdieh, Carry Oostveen, Joan Petzen, and Steve Richards.

1999 DAIRY FARM BUSINESS SUMMARY INTENSIVE GRAZING FARMS

INTRODUCTION

Dairy farm managers throughout New York State have been participating in Cornell Cooperative Extension's farm business summary and analysis program since the early 1950's. Managers of each participating farm business receive a comprehensive summary and analysis of the farm business.

The farms included in the study are a subset of New York State farms participating in the Dairy Farm Business Summary (DFBS). Sixty-five farms indicated that they grazed dairy cows at least three months, moving to a fresh paddock at least every three days and more than 30% of the forage consumed during the growing season was from grazing. Operators of these 65 farms were asked to complete a grazing practices survey. Thirty-four of the farms did complete it. The investigators had special interest in practices used on farms with above average profitability. Therefore the study centered on 29 farms which were not first year grazers and on which at least 40 percent of forage consumed during the grazing season was grazed. These 29 farms were divided on the basis of labor and management income per operator per cow above and below \$193 which was the average for all farms participating in DFBS. Thirteen farms with labor and management income per operator per cow above \$193 are in the "Above Average" group and sixteen farms with labor and management income per operator per cow below \$193 comprise the "Below Average" group.

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 business through appropriate use of historical farm data and the application of modern farm business analysis techniques. This information can also be used to establish goals that will enable the business to better meet its objectives. In short, DFBS provides business and financial information needed in identifying and evaluating strengths and weaknesses of the farm business.

Format Features

The first section compares farms that participated in the Dairy Farm Business Summary project in 1998 and 1999 and also completed the grazing practices survey in both years. The second section of this publication reports data from the grazing practices survey. A comparison of intensive grazing farms with non-grazing farms is included on page 7. The third section, Case Studies, describes three New York grazing farms. The next section summarizes grazing farms that had more than 100 cows.

The summary and analysis portion of this report follows the same general format as in the 1999 DFBS individual farm report received by all participating dairy farmers. It may be used by any dairy farm manager who wants to compare his or her business with the average data of intensive grazing farms. A DFBS Data Check-in Form can be used by non-DFBS participants to summarize their businesses.

The summary and analysis portion of the report features:

- (1) an income statement including accrual adjustments for farm business expenses and receipts, as well as measures of profitability with and without appreciation,
- (2) a complete balance sheet with analytical ratios;
- (3) a statement of owner equity which shows the sources of the change in owner equity during the year;
- (4) a cash flow statement and debt repayment ability analysis;
- (5) an analysis of crop acreage, yields, and expenses;
- (6) an analysis of dairy livestock numbers, production, and expenses; and
- (7) a capital and labor efficiency analysis.

PROGRESS OF THE FARM BUSINESS

Comparing your business with average financial data from DFBS grazing 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 futures. Please refer to the table on page 3 for selected factors from 44 farms that were grazing in both 1998 and 1999 and participated in the DFBS project for both years.

These 44 farms stayed at the same herd size 1997 to 1998. With no change in herd size, worker equivalents, pasture base, and total tillable and non-tillable pasture acres stayed relatively the same. Milk sold per cow increased 3.9% to 18,523 pounds. This increase in production coupled with a stable herd size lead to a 3.2% increase in the total milk production shipped off the farm.

With both herd size and worker equivalents showing little change, cows per worker equivalent also did not change. However, again reflecting the increase in milk sold per cow, milk sold per worker equivalent increased 2.8 percent. While labor efficiency did increase, so did the costs for hired labor. Hired labor cost per worker equivalent increased 4.8 percent to \$20,637. The increase in labor efficiency did offset some of this increase, put hired labor expense per cwt. of milk shipped still increased by 2.9 percent. With this increase in hired labor costs and the decrease in milk price, hired labor cast as a percent of milk sales increased to 9.4 percent.

While milk production did increase on a per cow basis, it was not necessarily due to better pasture conditions. With the dry growing conditions many producers were forced to go back to full rations in the barn to continue feeding their cows for part of the summer. These dryer growing conditions are reflected in the change in crop yields for those feeds that were harvested. Hay dry matter tons per acre decreased 10.9 percent and as fed corn yields decreased 6.3 percent.

With the dryer growing conditions and feeding of full rations more during the summer, feed costs were relatively unchanged for the year, even though prices for purchased feed did decrease during the year. Grain and concentrate purchased as a percent of milk sales increased to 23 percent and grain and concentrate purchased per cwt. of milked shipped decreased 2.9 percent.

Total farm operating expenses per cwt. of milked shipped increased 1.9 percent to \$12.33. Operating costs to produce milk increased 3.6 percent, and total costs to produce milk increased 4.3 percent.

Gross milk price decreased 4 percent to \$14.89 per cwt. and net milk price decreased 4.3 percent to 14.31 per cwt. Gross milk sales per cow only decreased 1 percent, due to the increase in milk sold per cow. Dairy cattle sales per cow increased 19.3 percent and dairy calf sales per cow fell 12 percent.

The small decreases in milk price coupled with the small increases in operating expenses and the decrease in crop yields lead to sharp declines in farm profitability.

- Net farm income without appreciation fell 29.4 percent to \$42,034.
- Net farm income with appreciation fell 22 percent to \$53,208.
- Labor and management income per operator fell 51.3 percent to \$13,798.
- Rate of return on equity capital without appreciation fell to 1 percent.
- Rate of return on all capital without appreciation fell to 2.4 percent.

While profits did decrease from 1998, they were still positive and are reflected in the financial summary of these farms. Net worth increased 6 percent, debt per cow fell 4.6 percent to \$1,787, and debt to asset ratio decreased 6.9 percent to 0.27.

PROGRESS OF THE FARM BUSINESS
Same 44 Grazing Dairy Farms, 1998 & 1999

Selected Factors	Average of 44 Farms		Percent Change
	1998	1999	
<u>Size of Business</u>			
Average number of cows	81	81	0.0
Average number of heifers	62	64	3.2
Milk sold, lbs.	1,452,815	1,499,123	3.2
Worker equivalent	2.62	2.63	0.4
Total nontillable and tillable pasture & hay acres	202	204	1.0
Total nontillable pasture & tillable acres	275	272	-1.1
<u>Rates of Production</u>			
Milk sold per cow, lbs.	17,833	18,523	3.9
Hay DM per acre, tons	2.58	2.30	-10.9
Corn silage per acre, tons	15.8	14.8	-6.3
<u>Labor Efficiency & Costs</u>			
Cows per worker	31	31	0.0
Milk sold/worker, lbs.	554,510	570,009	2.8
Hired labor cost/cwt.	\$1.36	\$1.40	2.9
Hired labor cost/worker	\$19,701	\$20,637	4.8
Hired labor cost as % of milk sales	8.7%	9.4%	8.0
<u>Cost Control</u>			
Grain & conc. purchased as % of milk sales	22%	23%	4.5
Grain & conc. per cwt. milk	\$3.46	\$3.36	-2.9
Dairy feed & crop expense per cwt. milk	\$4.47	\$4.36	-2.5
Labor & mach. costs/cow	\$1,082	\$1,244	15.0
Total farm operating costs per cwt. sold	\$12.10	\$12.33	1.9
Interest costs per cwt. milk	\$0.87	\$0.61	-29.9
Milk marketing costs per cwt. milk sold	\$0.56	\$0.58	3.6
Operating cost of producing cwt. of milk	\$10.23	\$10.61	3.7
Total costs of producing cwt. of milk	\$15.26	15.92	4.3
<u>Capital Efficiency (average for the year)</u>			
Farm capital per cow	\$6,301	\$6,555	4.0
Mach. & equip. per cow	\$1,215	\$1,335	9.9
Asset turnover ratio	0.51	0.49	-3.9
<u>Income Generation</u>			
Gross milk sales per cow	\$2,781	\$2,756	-0.9
Gross milk sales per cwt.	\$15.51	\$14.89	-4.0
Net milk sales per cwt.	\$14.95	\$14.31	-4.3
Dairy cattle sales per cow	\$150	\$179	19.3
Dairy calf sales per cow	\$25	\$22	-12.0
<u>Profitability</u>			
Net farm income w/o apprec.	\$59,547	\$42,034	-29.4
Net farm income w/apprec.	\$68,188	\$53,208	-22.0
Labor & mgt. income per oper./manager	\$28,329	\$13,798	-51.3
Rate of return on equity capital w/o apprec.	6.1%	1.0%	-83.6
Rate of return on all capital w/o apprec.	6.6%	2.4%	-63.6
<u>Financial Summary</u>			
Farm net worth, end year	\$369,339	\$391,545	6.0
Debt to asset ratio	0.29	0.27	-6.9
Farm debt per cow	\$1,874	\$1,787	-4.6

INTENSIVE GRAZING SURVEY SUMMARY

From the survey data of the 29 selected grazing farms, analysis of average production levels and profitability measures are shown below. Labor and Management Income per operator per cow is used this year to separate the grazing farms to look at grazing practices and relationships that they may have with farm performance. Labor and management income per operator is a measure of how much an owner/operator of a dairy farm made for his or her labor and management. Labor and management income per operator is calculated by subtracting a charge for unpaid family labor and a charge for equity capital used in the business from net farm income and dividing by the number of owner/operator's on the farm. By dividing by the number of cows, the impact of farm size on labor and management income is removed. Labor and management income per operator per cow provides a measure of farm performance that correlates with management of the business. The state average of \$193 for labor and management income per operator was used to divide the 29 farms into 13 "above average" farms and 16 "below average" farms.

SELECTED PRODUCTION AND PROFITABILITY MEASURES

Intensive Grazing Dairy Farms, 1999

	13 Above Average Farms	16 Below Average Farms
Pounds milk sold per cow	18,454	17,905
Labor and management income/operator/cow	\$502	\$-35
Operating cost of producing milk per cwt.	\$8.76	\$11.39
Total cost of production per cwt.	\$14.37	\$16.48

Comparison of survey data on the various grazing practices, such as water availability, supplemental feeding, pasture species, pasture management, adjustments due to drought and frequency of rotation are shown as follows:

GRAZING PRACTICES

Intensive Grazing Dairy Farms, 1999

	13 Above Average Farms	16 Below Average Farms
Average number of cows	53	92
Average percent forage from pasture	68%	66%
Average length of grazing season	187	184
Labor and management income/operator/cow	\$618	\$-29
Pounds milk sold per cow	18,560	17,229
Average pounds dry matter supplemented grain	13.77	12.87
Percent farms supplement with forage	92%	88%
Average pounds dry matter supplemented forage	8.8	6.07
Percent rotated after each milking	46%	38%
Percent rotated one time a day	23%	44%
Percent rotated every other day	15%	13%
Percent rotated every third day	8%	6%
Percent other rotation	8%	0%
Percent farms applied fertilizer	62%	56%
Percent farms that clipped pasture	92%	69%
Percent farms weed problems	39%	19%
Percent farms water every paddock	31%	69%
Percent farms water every laneway	69%	31%
Percent farms prevented from grazing due to drought	23%	38%
Percent farms added extra acres due to drought	46%	13%
Percent farms reseeded pasture in the last 10 years	54%	56%
Average percent pasture that was reseeded in the last 10 years	27%	64%
Percent farms harvested mechanically	69%	50%
Average percent pasture harvested by machine	50%	45%
Most common pasture species:		
First	Grass mix	Orchard grass
Second	Orchard grass	Grass mix
Third	Native clover	Native clover

Rotating after each milking, clipping the pasture, supplementing with forage, and bringing more acres into rotation when drought occurs seemed to be practices that led to greater profitability and higher production per cow within the above average group. Some of the farms in the below average group used these same practices. The tables below compare the above average group of farms to the below average group of farms for certain practices. Successful managers of grazing farms need all of the skills for managing the herd in the barn during the winter in addition to grazing management skills.

Water Availability

The study of the financial data to determine the effect of having water in every paddock on farm profitability shown above was further analyzed. This is the first year that having water in every paddock has indicated a lower profitability.

WATER AVAILABILITY Intensive Grazing Farms, 1999

	13 Above Average Farms		16 Below Average Farms	
	Water in Every Paddock?		Water in Every Paddock?	
	(4) Yes	(9) No	(11) Yes	(5) No
Pounds milk sold per cow	19,666	18,068	16,929	17,888
Labor and management income/operator/cow	\$593	\$628	\$-42	\$-0.4
Operating cost of producing milk/cwt.	\$9.54	\$8.31	\$11.12	\$10.39
Percent forage from pasture	63%	70%	64%	69%

Supplemental Feeding

The table below compares the farms that fed corn silage, grain, and other forage to those that fed only grain and other forage. The farms that fed grain, corn silage, and other forage in both the above average group and below average group had higher labor and management income per operator per cow and pounds of milk sold per cow than the farms that fed only grain and other forage. However, other factors influence the profitability, such as cost of feed. This demonstrates the importance of feeding an energy supplement, such as corn silage, to compliment the pastures. For a more specific look at what was being fed to these grazing herds, see the following section "Ration Details".

SUPPLEMENTAL FEEDING Intensive Grazing Farms, 1999

	13 Above Average Farms		16 Below Average Farms	
	(6) Corn Si- lage	(7) No Corn Silage	(8) Corn Si- lage	(8) No Corn Silage
Pounds milk sold per cow	18,951	18,224	17,503	16,955
Labor and management income/operator/cow	\$713	\$536	\$15	\$-73
Pounds dry matter of grain	12.5	14.9	14	14.6
Pounds dry matter of corn silage	7.83	-----	6.44	-----
Pounds dry matter of other forage*	5.7	5.3	9.3	6.2
Percent forage from pasture	63%	72%	67%	66%

*Other includes baleage, dry hay, or other forage.

Ration Details

Of the 13 farms above the \$193 state grazing average for labor and management income per operator per cow, all fed grain during the grazing season. Six of the farms fed corn silage. Two farms reported feeding baleage with an average rate of 8 pounds dry matter, three fed dry hay at 5 pounds dry matter, and two fed other forage at an average rate of 3 pounds dry matter.

Of the 16 farms below the \$193 state grazing average, all fed grain during the grazing season. Eight of the farms fed corn silage. None of the farms fed baleage, five farms fed dry hay at an average rate of 4 pounds dry matter, one farm fed haylage at an average rate of 7.5 pounds dry matter, and one farm reported feeding other forage with 4 pounds dry matter.

Frequency of Rotation

In the above average group, six farms rotated cows into a fresh paddock after each milking, three farms provided new pasture once per day, two farms moved the cows every other day, one farm rotated every three days, and one farm reported "other" as a rotation program. In the below average group, six farms rotated cows into a fresh paddock after each milking, seven moved the cows to a new pasture one time per day, two farms provided a fresh paddock every other day, and one noted "other" as a rotation program. The table below compares the rotation program of cows on new pasture to milk production and labor management income.

	ROTATION FREQUENCY			
	Intensive Grazing Farms, 1999			
	13 Above Average Farms		16 Below Average Farms	
	Rotation		Rotation	
	(6) After Each Milking	(7) Other	(6) After Each Milking	(10) Other
Pounds milk sold per cow	18,948	18,226	15,016	18,557
Labor & management income/operator/cow	\$645	\$594	\$-73	\$-3

Water Source

There are various options for providing water to pasture. This is the first year source of water has been studied.

	WATER SOURCE			
	Intensive Grazing Farms, 1999			
	13 Above Average Farms		16 Below Average Farms	
	(4) Well	(9) Other	(9) Well	(6) Other
Pounds milk sold per cow	18,145	18,744	16,562	18,086
Labor & management income/operator/cow	\$493	\$673	\$-58	\$15

*Pond, stream, spring, or water wagon

Drought

Farms that were able to bring in additional acreage had higher profitability (or less loss). The table below indicates that last year bringing additional acres into pasture produced more pounds of milk sold per cow and was more profitable than providing extra supplemental feed. However, on some farms it is not always possible to add acres for pasture.

	ADJUSTMENTS TO THE DROUGHT			
	Intensive Grazing Farms, 1999			
	13 Above Average Farms		16 Below Average Farms	
	(6) Additional Acres	(3) Supplemental Feed	(2) Additional Acres	(6) Supplemental Feed
Pounds milk sold per cow	18,996	16,367	18,206	16,212
Labor & management income/operator/cow	\$652	\$428	\$-52	\$-96

Intensive Grazing Satisfaction Comments

On a scale of 1 to 5, with 5 being the highest, the average rating of grazing satisfaction was 4. Other comments from graziers are:

- “Grazing system is minimally defined, in constant state of flux.”
- “Need to add another spring development.”
- “Doesn’t save time, but it’s a little easier.”
- “Grazing this past year left the soil exposed so that it dried even more.”
- “Only way to farm.”

Lifestyle Satisfaction Comments

On a scale of 1 to 5, with 5 being the highest, the average rating of lifestyle satisfaction was 4. Other comments from graziers are:

- “Life in the context of money is a jewel floating on a sea of sludge.”
- “More free time.”
- “Hard to get away.”
- “My major problem with my style of farming is that I need to be here seven days a week.”
- “Died and gone to heaven.”
- “Cows healthier, makes it easier to work with.”

INTENSIVE GRAZING FARMS VS. NON-GRAZING FARMS
New York State Dairy Farms, 1999

Item	All Intensive Grazing Farms	Non-Grazing Farms*	Profitable Grazing Farms**	Profitable Non- Grazing Farms***
Number of farms	65	133	13	25
<u>Business Size & Production</u>				
Number of cows	79	82	53	58
Number of heifers	60	61	38	42
Milk sold, lbs.	1,447,650	1,538,191	983,756	1,104,741
Milk sold/cow, lbs.	18,346	18,740	18,454	19,140
Milk plant test, % butterfat	3.68%	3.70%	3.63%	3.69%
Tillable acres, total	227	254	154	189
Hay crop, tons DM/acre	2.1	2.2	1.6	2.2
Corn silage, tons/acre	14.0	13.6	14.6	13.1
Forage DM/cow, tons	5.8	7.6	4.9	7.0
<u>Labor & Capital Efficiency</u>				
Worker equivalent	2.63	2.82	2.01	2.12
Milk sold/worker, lbs.	550,437	545,458	489,431	521,104
Cows/worker	30	29	26	27
Farm capital/worker	\$187,311	\$213,761	\$154,963	\$195,179
Farm capital/cow	\$6,236	\$7,351	\$5,877	\$7,134
Farm capital/cwt. milk	\$34	\$39	\$32	\$37
<u>Milk Production Costs & Returns</u>				
Selected costs/cwt.:				
Hired labor	\$1.28	\$1.08	\$0.71	\$0.62
Grain & concentrate	\$3.38	\$3.67	\$3.20	\$3.46
Purchased roughage	\$0.27	\$0.42	\$0.47	\$0.58
Replacements purchased	\$0.25	\$0.28	\$0.15	\$0.29
Vet & medicine	\$0.37	\$0.39	\$0.26	\$0.37
Milk marketing	\$0.60	\$0.64	\$0.75	\$0.60
Other dairy expenses	\$0.91	\$0.94	\$0.66	\$0.90
Operating cost/cwt.	\$10.53	\$10.73	\$8.76	\$9.35
Total labor cost/cwt.	\$3.90	\$3.73	\$4.29	\$3.88
Operator resources/cwt.	\$3.53	\$3.42	\$3.97	\$3.96
Total cost/cwt.	\$15.87	\$15.81	\$14.37	\$14.72
Average farm price/cwt.	\$14.85	\$14.74	\$14.95	\$14.67
Return over total costs/cwt.	\$-1.02	\$-1.07	\$0.58	\$-0.05
<u>Related Cost Factors</u>				
Hired labor/cow	\$235	\$202	\$131	\$118
Total labor/cow	\$715	\$700	\$797	\$739
Purchased dairy feed/cow	\$670	\$766	\$682	\$768
Purchased grain & concentrate as % of milk receipts	23%	25%	21%	24%
Vet & medicine/cow	\$68	\$74	\$47	\$71
Machinery costs/cow	\$545	\$531	\$477	\$491
Feed & crop exp./cwt.	\$4.39	\$4.96	\$4.16	\$4.70
<u>Profitability Analysis</u>				
Net farm income (without appreciation)	\$42,858	\$43,135	\$48,940	\$47,786
Net farm income per cow (w/o apprec.)	\$543	\$526	\$923	\$824
Labor & management income/operator	\$13,203	\$10,297	\$26,586	\$21,039
Labor & management income per oper. per cow	\$167	\$126	\$502	\$363
Rates of return on:				
Equity capital with appreciation	3.7%	3.7%	12.3%	7.1%
All capital with appreciation	4.4%	4.7%	10.9%	6.9%

*Farms with similar herd size, as the 65 rotational grazing farms.

**Farms with labor & management income per operator per cow greater than \$193, had been grazing at least two years, and forage from pasture at least 40 percent.

***Farms with similar herd size as the 13 profitable grazing farms and labor & management income per operator per cow greater than \$193.

CASE STUDIES

Bentera Farms

Fay and Linda Benson are the owners and operators of this 34-cow dairy farm that they purchased in 1983. In 1997 the farm was certified organic.

Fay decided to graze several years after he purchased the farm in an effort to reduce labor costs. In 1991 the farm started grazing, with small pastures that seemed easy to manage. Fay also saw the cost efficiency in allowing the cows to graze versus harvesting by machine. This again helped to balance labor with profitability. Now he is rotating his pastures in a two to three year rotation with corn. He feels that to make the best use of his land he needs to rotate pastures with crops. His reason being that this leaves the soil healthier. With this practice the cows graze the pasture down and the weeds don't take over (which would leave many patches uneaten). His most recent rotation is one time per day. He grazes the heifers behind the milking cows when there is grass left, otherwise there are permanent pastures that they graze.

A mobile 1000-gallon water tank is used to give the cows the needed water. This allows water to be available in every paddock. He feels that being aware of the condition the cows are in is important. He leaves the gates to the barn open at all times but the cows can only get into the barnyard. He only feeds ground cob corn (about 12-pounds/cow/day) outside in a bunk after milking. After the cows have eaten this they move on to the pasture. He also clips the paddocks other than when they are mechanically harvested. Being organic, he doesn't apply any commercial fertilizer, and the only manure applied is from the cows while on the pasture.

Because of the drought last year (1999) he had to stop grazing for one month. He was also forced to harvest his barley and corn for silage rather than grain. This left him without any grain for the winter. Rather than buying organic grain he tried to get through the winter months without any grain for the cows. The cows lost body condition throughout the winter months and in the spring he dealt with many more postpartum problems than previous years.

The decision to change to organic production was motivated by the financial struggles that the farm was undergoing. When Benson first began the transition there was no guarantee that organic farmers would get a higher price, but he went ahead to become organic. In 1997, the organic milk price was \$17/ cwt. and now the price has risen to \$21/cwt. Becoming organic was turbulent for Mr. Benson and his family. One situation that he had trouble adjusting to was that antibiotics for drying off cows were not available to organic farmers. He eventually adjusted and began to see results. The cows were also becoming healthier. The vet only visits the farm two times a year now, and those are mainly for pregnancy checks. Fay Benson says, "By lowering the stress on the cow, you lower the stress on the farmer." However over the three years of becoming organic he almost lost the farm. There was a ninety-day transition period for the milking cows during which organic grain must be fed. He was paying the price of organic feed, but still getting conventional prices for his milk. On November 1, 1997 he received his first organic milk check. The amount increased by 40% compared to what it would have been for conventional milk.

The farm must be certified organic by a separate agency. Fay's agency worked with him to ease the transition and gave advice on organic practices. This particular agency costs \$800/ year for his size farm and an organic dairy must renew its certification every year. Fay Benson says that the first year there was a lot of paperwork and there still is paperwork to be done that is time consuming, but the first year was like "pouring salt in a wound." There is more to being certified than just not using chemicals. Organic dairy farmers must follow the rules and guidelines that deal with the humane treatment of the animals.

When Fay Benson first started his own farm he thought he would grow into a larger farm, but he decided that it was a "better feeling" to run a small farm. He said his goals were more attainable. His goal now is to find out how to make a small farm pay. He tries to minimize his costs instead of increasing herd size. He is working to improve his management and the health of the cows. As an organic producer, he cannot use the medicines that most conventional farmers use.

He doesn't see any big changes in his life. He has found the niche that he can manage. He also says that managing an organic farm isn't for everyone. The move toward grazing was gradual and motivated by labor efficiency. The move to become organic stemmed more from financial strains, but after the transition period was completed he felt being organic was more of a philosophy than a business. Overall, he is happy with his decision to implement grazing and with his life-style.

Shoestring Dairy

History

Jim and Elaine Rowe and family started Shoestring Dairy in December of 1985 in a rented barn with 20 cows. Through the eighties and early nineties the dairy moved five different times, each time to a different rented barn and various herd sizes up to 200 cows. During this time all feed was purchased or fieldwork was custom hired and the only assets owned were cows.

In the summer of 1997, they were milking 200 cows in a rented barn and buying corn silage and haylage out of the bunker silos. With 1997 being a poor crop year and lower quality forages being put up in the bunkers, Jim and Elaine were concerned about maintaining the success that they had. Also, they were getting tired of renting barns. With this in mind they sold their cows in December of 1997 and began to look seriously for a farm to purchase.

The Decision to Graze

In July of 1997 when all the bills were paid and Jim realized how much he was spending for all his feed, grains and forages, he felt that there might be a way to further increase the margins by lowering his feed cost. With this goal in mind he began to do some research into intensive grazing and contacted Gary Burley, of East Hill Farms in Warsaw, NY, and asked him how much his feed costs were for that same month. After talking with Gary, Jim felt that the farm they purchased should work with grazing and that this would be a consideration in selecting which farm to buy.

Buying a Farm

In the fall of 1997 and into early 1998 they looked at many different farms to purchase throughout western New York. Realizing that they were not experienced in grazing, they enlisted the aid of Gary Burley and he visited three different farms to apply a pasture management eye to the land and facilities and look at the potential for grazing at each location. In February of 1998 a purchase offer was placed on a farm in Pike, New York. Also at this time a small freestall barn was rented and Jim began milking and buying cows again to build up a herd to move to the new farm. In October of 1998 the herd of 40 cows was moved to the new farm. A TMR purchased and delivered from a neighboring farm was the feed source for the cows through 1998 and the first few months of 1999.

Setting up for Grazing

During the winter of 1998-1999, plans were laid out to convert the land to pastures and manage the herd on pasture. Again utilizing the experience of a successful grazer, Gary Burley visited and walked the farm two more times to help lay out laneways and pastures and design the water system. In the spring of 1999, Jim and Elaine's oldest son Jamie agreed to work on the farm for 4 months building fence, installing water systems, and planting seedings. Thirteen miles of single-strand high-tensile fence were built, 3 miles of 1-inch 160-psi plastic water line was laid, and 75 acres were seeded to ryegrass. As the process didn't start until the weather permitted, much of the fence and water systems were being finished just in time to allow the cows into the paddocks.

First Year of Grazing

For the summer of 1999, there were 75 acres of new seeding, 42 acres of existing hay stands, and 13 acres of pasture that were used to graze 120 cows. At the start of the grazing season in early April, the cows were at 67 pounds of milk sold per cow per day. One of the most exciting, challenging, and frustrating things that Jim and Elaine faced was trying to maintain milk production while using the grazing system. With the combination of switching to grazing, new seeding, hot weather, drought, and feeding TMR, each time a change was made cows dropped in milk production and by the end of the grazing season the cows were producing 42 pounds per cow per day. Within two weeks of being full time back on TMR and utilizing no grass the cows were back up to 65 pounds per day. Even though he was frustrated with milk production, Jim was excited about the condition of the cows, the labor efficiency on the farm, the feed costs during the grazing season

and felt that grazing was the right decision. With only half the cows in 1998 as he had in 1997, he equaled the returns in the Dairy Farm Business Summary from 1997.

2000 Changes and Challenges

Still believing that he can maintain 65 pounds of milk per cow while grazing, Jim has made some changes to what he has done in 1999 to help meet this goal. Jim felt that he had a variety specific palatability problem with some of the rye grasses planted last year and noticed that the cows would not graze the grasses. In 2000, 40 acres of the new seedings were killed and replanted to orchard, clover, and other varieties of rye grass. Jim also is planning to continue improving lane-ways for both mud and traffic patterns. A manure lagoon is planned to improve labor efficiency in the barn for manure scraping and to also better utilize liquid manure spreading capabilities of custom operators. A John Deere Gator was purchased to continue improving time management and to move supplies easier. Cows were brought in 1 hour before milking to give greater access to feed bunks and the TMR. A Bushhog mower was purchased to clip pastures. Starting this year they are going to raise replacements (20 spring born heifers) to better manage the pastures. The big goals for the 2000 grazing season is to continue to learn how to manage the growth of the pastures and to maximize the dry matter produced and consumed by the grazing cows.

Involving family members in the farm is one of the exciting areas of grazing. Son Jonathan, who is going into 12th grade, is the grass manager and decides on pasture sizing and rotation and daughter Janelle, who is going into 7th grade takes care of all newborn calves.

Jim and Elaine feel that the profit potential of grazing has not yet been reached and are excited about the change. They are interested in more business analysis of the performance of grazing herds for the whole year and also for just during the grazing season. They feel that it is a great way to farm and offer this advice to people thinking about utilizing grazing – “go on lots of pasture walks and visit as many grazing farms as you can before you make any decisions”.

The “Kiss” Philosophy

Tom Donnelly’s approach to farming is simple, philosophical and holistic. He graduated from Cornell University in 1980 and made the decision not to return to the home farm full-time. Instead, he worked off the farm, helping his family operate their 124-acre Delaware County dairy operation part-time. Gradually, Tom purchased the cows and machinery from his parents. In 1988, having purchased all his parents assets Tom made the decision to quit his day job and farm full time.

Tom began his new career as a dairy producer with the following three goals:

- Find a balance between his personal and farm business life.
- Generate an “adequate” family living for his family of four.
- Create a financially strong business that would allow him the opportunity to sell the cows and pursue another production agriculture career at the age of 45.

So far so good. According to the 1999 Cornell Dairy Farm Business Summary, Donnelly is shipping 625,181 pounds of milk per worker, up 25,000 pounds from 1998. His operating cost of producing milk on a per cwt. basis was \$7.90, his return to all capital and return to equity was 16.5% and his grain and concentrate purchases as a percent of milk sales was 20%. Forty-five is just a few years away and Tom is in the position to sell the cows and pursue a less demanding production agriculture enterprise.

The Secret to Success?

According to Donnelly, there is no secret behind his success, although, he does implement a “KISS” management philosophy: “Keep It Simple Stupid.” The KISS philosophy combined with off farm investing and excellent cost control has helped Donnelly meet his goals.

The 41 cows at Donnelly’s farm are grazed on 91 acres. Fifty percent of the pastures are mechanically harvested for forage. The pastures are fertilized with manure, commercial fertilizer and lime. Pasture vegetation consists of 20% native grass mix, 15% bluegrass, 15% native white clover, 40% orchard grass and 10% timothy. No land has been seeded or reseeded for grazing during the last ten years.

The cows are moved to a new paddock each day. Although water is not provided in every paddock, water is available in the lanes near each paddock. In addition to pasture, the milking cows consume a simple ration of hay and a 16% grain mix during the summer months.

During the winter months the cows are fed a ration of hay, haylage, corn silage and a 20% grain mix.

Tom ships 17,841 pounds of milk per cow on an annual basis.

Why Graze?

In 1995 Tom recognized that his parents were not always going to be able to help on the farm. In an effort to fulfill his first goal of farming; i.e., finding a balance between his personal and farm business life, Tom began grazing. “The number one reason I graze is because of labor efficiency,” reports Donnelly. According to Donnelly, “I have two choices, either to harvest the forages myself, turn around and feed the forages to the cows, or I can just let the cows harvest their own feed.” Labor efficiency measurements include 35 cows per worker equivalent and 625,181 pounds of milk sold per worker equivalent.

Grazing is not the only step Tom has taken to become more efficient and maintain a balance between his personal and business life. In 1999 he reduced his number of acres from 118 to 74. By reducing the acres and purchasing forages, Tom is able to spend more time with his wife, Ginny, and their three children: Nathan, age 12; Christopher, age 10; and Ben, age 8.

The Future?

Tom is often asked the following question: Are you concerned about remaining competitive with larger, more technologically advanced farms? The answer is, “no”. Tom admits he is “tight with a buck” and he believes that the surviving dairy businesses will be the ones who can produce milk the cheapest. With an operating cost of producing milk of \$7.90 per cwt., Donnelly believes he will remain competitive for many years to come.

However, Tom Donnelly has the option of not milking cows if he so chooses!

SUMMARY OF GRAZING FARMS WITH OVER 100 COWS

There were ten farms with more than 100 cows that indicated on the 1999 Dairy Farm Business Summary that they were grazers. The table on the following page compares these ten grazing farms with 44 non-grazing farms of similar size and location. Surveys were collected from four of these ten large grazing farms.

Grazing Practices Information Collected from the Four Surveys Follows:

- These farms received an average of 62 percent of the forage in the ration from grazing.
- The average length of the grazing season was 198 days.
- All four farms provided water in every paddock.
- Two of the four farms provided new pasture after each milking, while one farm provided new pasture one time per day, and yet another provided new pasture every other day.
- All but one farm supplemented pasture with corn silage. All but one farm fed another form of forage.
- None of these farms indicated to have fed baleage.
- All four farms reseeded an average 58 percent of pasture acreage in the past 10 years.
- The four farms mechanically harvested an average of 36 percent of pasture that was also grazed.
- The most common pasture species were orchard grass, native grass mix, and native white clover.
- Three of the four farms applied commercial fertilizer.

Two of the four farms rated their level of satisfaction with intensive grazing at the highest, and the other two rated their satisfaction level at the second highest.

Three of the four farms rated their level of satisfaction with their lifestyle at the highest, while the fourth farm rated the level of satisfaction with the lifestyle at the second highest.

**INTENSIVE GRAZING FARMS WITH MORE THAN 100 COWS
VS. NON-GRAZING FARMS OF SIMILAR SIZE, 1999**

Item	Grazing Farms >100 Cows	Non-Grazing Farms
Number of farms	10	44
<u>Business Size & Production</u>		
Number of cows	179	173
Number of heifers	140	114
Milk sold, lbs.	3,395,406	3,528,151
Milk sold/cow, lbs.	18,979	20,348
Milk plant test, % butterfat	3.7%	3.70%
Tillable acres, total	429	403
Hay crop, tons DM/acre	3.1	2.8
Corn silage, tons/acre	14.9	15.2
Forage DM/cow, tons	5.4	6.9
<u>Labor & Capital Efficiency</u>		
Worker equivalent	4.33	4.43
Milk sold/worker, lbs.	784,158	796,422
Cows/worker	41	39
Farm capital/worker	\$252,737	\$254,184
Farm capital/cow	\$6,114	\$6,509
Farm capital/cwt. milk	\$32	\$32
<u>Milk Production Costs & Returns</u>		
Selected costs/cwt.:		
Hired labor	\$1.87	\$1.67
Grain & concentrate	3.19	3.65
Purchased roughage	0.23	0.33
Replacements purchased	0.45	0.42
Vet & medicine	0.47	0.42
Milk marketing	0.46	0.53
Other dairy expenses	1.11	1.21
Operating cost/cwt.	11.13	11.08
Operator resources/cwt.	2.22	2.34
Total labor cost/cwt.	2.86	2.95
Total cost/cwt.	15.01	14.77
Average farm price/cwt.	14.58	14.74
Return over total costs/cwt.	-0.43	-0.03
<u>Related Cost Factors</u>		
Hired labor/cow	\$355	\$340
Total labor/cow	543	601
Purchased dairy feed/cow	648	812
Purchased grain & concentrate as % of milk receipts	22%	25%
Vet & medicine/cow	\$89	\$86
Machinery costs/cow	\$536	\$490
Feed & crop exp./cwt.	\$4.23	\$4.77
<u>Profitability Analysis</u>		
Net farm income (without appreciation)	\$63,765	\$88,489
Net farm income/cow (without appreciation)	\$356	\$511
Labor & management income/operator	\$18,908	\$27,691
Rates of return on:		
Equity capital with appreciation	4.2%	9.2%
All capital with appreciation	5.1%	8.2%

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
65 Intensive Grazing Dairy Farms, 1999

Type of Farm	Number	Milking System	Number
Dairy	65	Bucket & carry	0
Part-time dairy	0	Dumping station	4
Dairy cash-crop	0	Pipeline	45
		Herringbone-conventional exit	10
		Herringbone-rapid exit	0
Type of Ownership	Number	Parallel	3
Owner	53	Parabone	0
Renter	12	Rotary	0
		Other	3
Type of Business	Number	Production Records	Number
Sole Proprietorship	51	Testing Service	44
Partnership	10	On-Farm System	2
Limited Liability Corporation	3	Other	4
Subchapter S Corporation	0	None	15
Subchapter C Corporation	1		
Type of Barn	Number	bST Usage	Number
Stanchion or Tie-Stall	47	Used on <25% of herd	2
Freestall	15	Used on 25-75% of herd	11
Combination	3	Used on >75% of herd	2
		Stopped using in 1999	1
Milking Frequency	Number	Not used in 1999	49
2 times per day	62	Business Record System	Number
3 times per day	1	Account Book	26
Other	2	Accounting Service	4
		On-farm computer software	34
		Other	1

The averages used in this report were compiled using data from all the participating dairy farms in this region unless noted otherwise. There are full-time dairy farms, part-time farms, dairy cash-crop farms, farm renters, partnerships, and corporations included in the average. Average data for these specific types of farms are presented in the State Business Summary.

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 1999.

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
65 Intensive Grazing Dairy Farms, 1999

Expense Item	Cash Paid	-	Change in Inventory or Prepaid Expense	+	Change in Accounts Payable	=	Accrual Expenses
<u>Hired Labor</u>	\$ 18,497		\$ -3	<<	\$ 40		\$ 18,540
<u>Feed</u>							
Dairy grain & concentrate	50,656		1,635		-54		48,967
Dairy roughage	4,292		430		76		3,938
Nondairy	43		0		1		44
<u>Machinery</u>							
Machinery hire, rent & lease	5,314		-33	<<	0		5,346
Machinery repairs & farm vehicle exp.	14,571		20		147		14,698
Fuel, oil & grease	4,254		163		-9		4,081
<u>Livestock</u>							
Replacement livestock	3,635		0	<<	-5		3,631
Breeding	3,281		111		23		3,193
Veterinary & medicine	5,562		46		-122		5,393
Milk marketing	8,663		0	<<	4		8,667
Bedding	1,163		38		-1		1,124
Milking supplies	5,745		10		60		5,795
Cattle lease & rent	912		0	<<	0		912
Custom boarding	484		0	<<	6		491
bST expense	1,496		-11		49		1,556
Other livestock expense	3,419		31		-3		3,386
<u>Crops</u>							
Fertilizer & lime	5,726		114		-48		5,564
Seeds & plants	3,138		358		-69		2,712
Spray, other crop expense	2,534		103		2		2,434
<u>Real Estate</u>							
Land, building & fence repair	5,336		57		6		5,284
Taxes	4,859		-42	<<	-212		4,689
Rent & lease	5,490		0	<<	-19		5,471
<u>Other</u>							
Insurance	4,159		7	<<	-1		4,151
Utilities (farm share)	6,328		0	<<	-116		6,213
Interest paid	8,568		0	<<	173		8,741
Miscellaneous	3,212		49		82		3,245
Total Operating	\$181,338		\$ 3,085		\$ 11		\$ 178,264
Expansion livestock	2,233		0	<<	-354		1,879
Machinery depreciation							13,861
Building depreciation							5,824
TOTAL ACCRUAL EXPENSES							\$ 199,828

Change in prepaid expenses (noted above by <<) is a net change in non-inventory expenses that have been paid in advance of their use. For example, prepaid lease expense on the beginning of year balance sheet represents last year's payment for use of the asset during this year. End of year prepaid expense represents payments made this year for next year's use of the asset. Adding payments made last year for this year's use of the asset, and subtracting payments made this year for next year's use of the asset is accomplished by subtracting the difference.

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 1999 but not paid for. A decrease is subtracted because it represents payment for resources used before 1999.

Accrual expenses are an estimate of the costs of inputs actually used in this year's production. They are the cash paid, less changes in inventory and prepaid expenses, plus accounts payable.

CASH AND ACCRUAL FARM RECEIPTS
65 Intensive Grazing Dairy Farms, 1999

Receipt Item	Cash Receipts	+	Change in Inventory	+	Change in Accounts Receivable	=	Accrual Receipts
Milk sales	\$ 219,854				\$ -4,856		\$ 214,998
Dairy cattle	10,892		\$ 2,794		242		13,928
Dairy calves	1,821				1		1,822
Other livestock	1,331		144		-37		1,438
Crops	940		-2,101		-314		-1,474
Government receipts	7,119		1 *		32		7,152
Custom machine work	502				-21		481
Gas tax refund	193				6		199
Other	<u>3,648</u>				<u>492</u>		4,141
Less nonfarm noncash capital**		(-)	<u>0</u> **			(-)	<u>0</u>
Total Receipts	\$ 246,301		\$ 838		\$ -4,454		\$ 242,686

*Change in advanced government receipts.

**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 values 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 increase in advanced government receipts is subtracted from cash income because it represents income received in 1999 for the 2000 crop year in excess of funds earned for 1999. Likewise, a decrease is added to cash government receipts because it represents funds earned for 1999 but received in 1998.

Changes in accounts receivable are calculated by subtracting beginning year balances from end year balances. Payments in January for milk produced in December 1999 compared to January 1999 payments for milk produced in 1998 are 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* 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.

These measures should be considered estimates as they include inventory values that are only estimates and they include an unknown degree of error stemming from cash flow imbalances.

* Operators are the individuals who are integrally involved in the operation and management of the farm business. They are not limited to those who are the owner of a sole proprietorship or are formally a member of the partnership or corporation.

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, and financing 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.

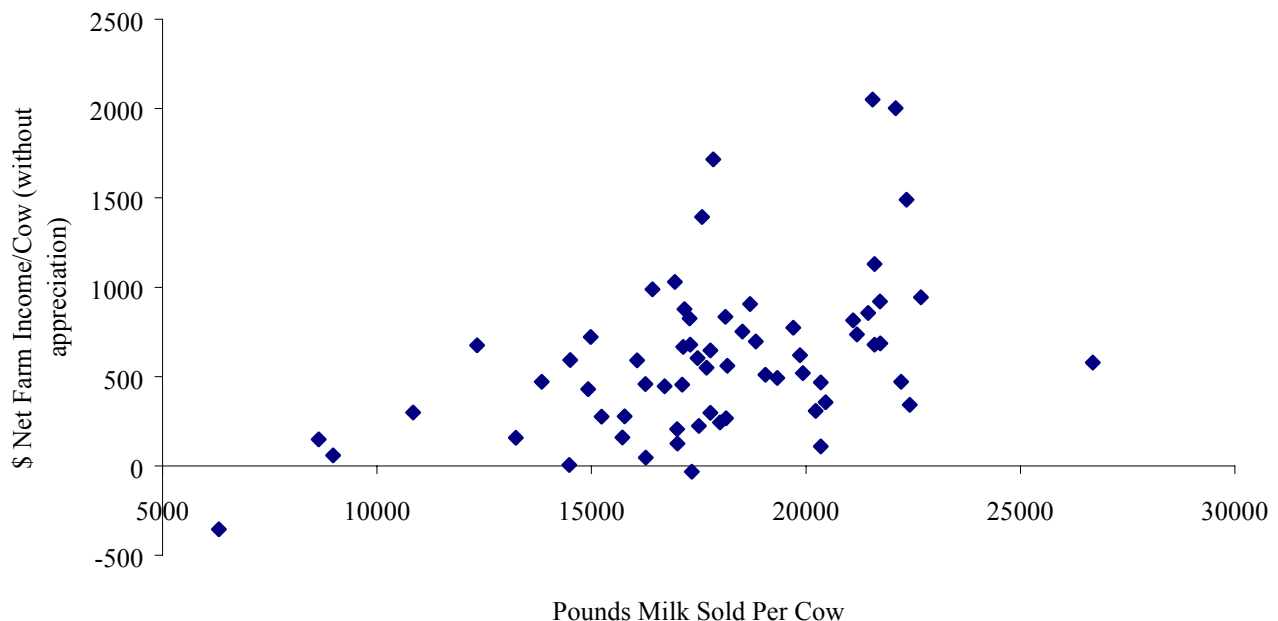
Net farm income is computed both with and without appreciation. Appreciation represents the change in values caused by annual changes in prices of livestock, machinery, real estate inventory, and stocks and certificates (other than Farm Credit). Appreciation is a major factor contributing to changes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

NET FARM INCOME
Intensive Grazing Dairy Farms, 1999

Item	65 Grazing Dairy Farms	13 Above Average Farms	16 Below Average Farms
Total accrual receipts	\$ 242,686	\$ 165,151	\$ 266,986
Appreciation: Livestock	4,009	6,615	4,200
Machinery	2,747	2,385	3,801
Real Estate	3,164	1,967	5,954
Other Stock & Certificates	73	-151	58
Total Including Appreciation	\$ 252,679	\$ 175,967	\$ 280,999
Total accrual expenses	- 199,828	- 116,211	- 245,470
Net Farm Income (with appreciation)	\$ 52,851	\$ 59,756	\$ 35,529
Net Farm Income Per Cow (with appreciation)	\$ 669	\$ 1,127	\$ 386
Net Farm Income (without appreciation)	\$ 42,858	\$ 48,940	\$ 21,516
Net Farm Income Per Cow (without appreciation)	\$ 543	\$ 923	\$ 234

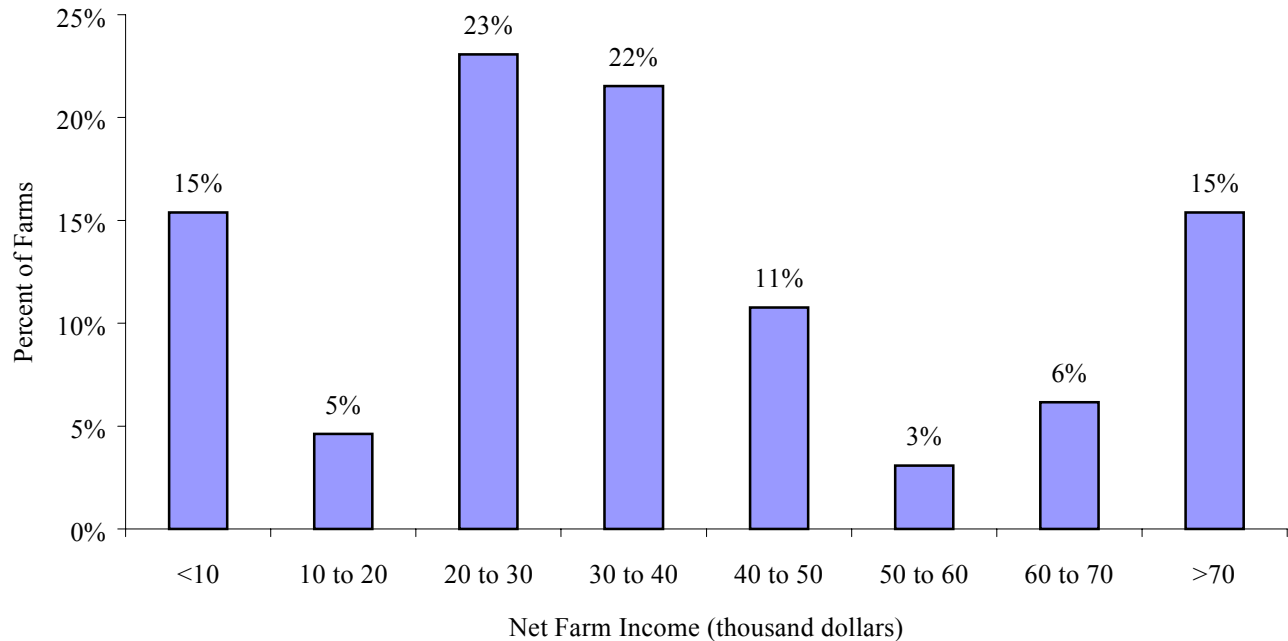
The chart below shows the relationship between net farm income per cow (with appreciation) and pounds of milk sold per cow. Generally, farms with a higher production per cow have higher profitability per cow.

NET FARM INCOME PER COW AND MILK PER COW
65 Intensive Grazing Dairy Farms, 1999



Net farm income without appreciation averaged \$42,858 on these 65 farms in 1999. The range in net farm income without appreciation was from less than \$-10,000 to more than \$195,000. Net farm income was less than \$20,000 on 20 percent of the farms, between \$20,000 and \$40,000 on 45 percent of the farms, while 35 percent showed net farm income of \$40,000 or more.

DISTRIBUTION OF NET FARM INCOME WITHOUT APPRECIATION
65 Intensive Grazing Dairy Farms, 1999



Labor and management income is the return which farm operators receive for their labor and management used in 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 family labor unpaid 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.

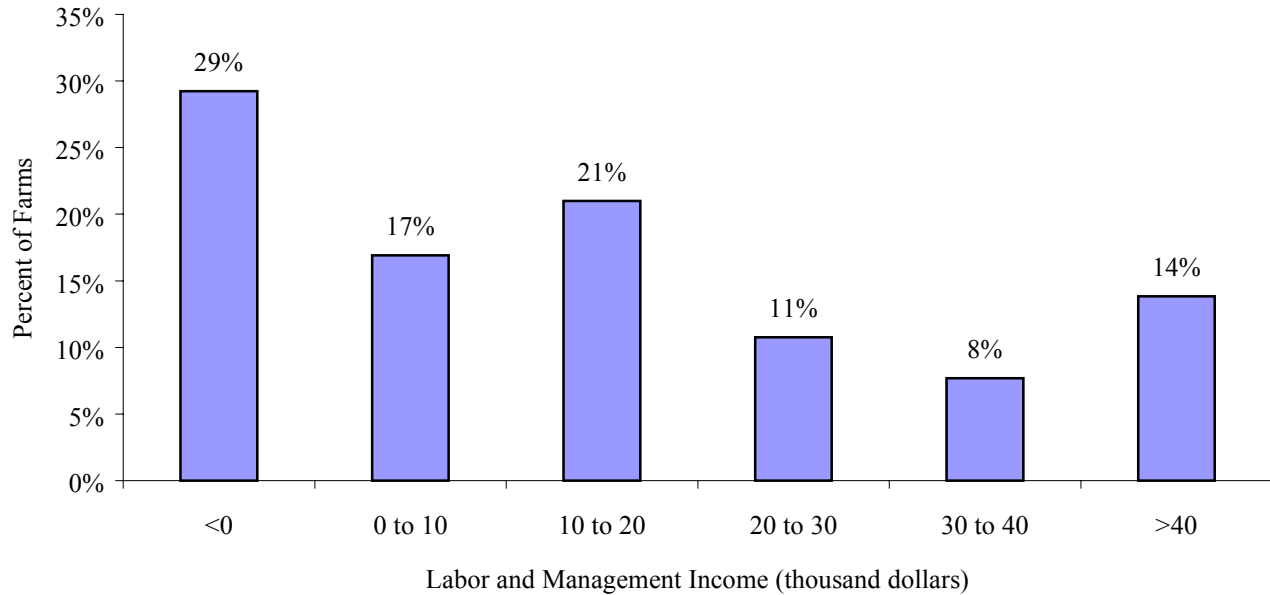
LABOR AND MANAGEMENT INCOME
Intensive Grazing Dairy Farms, 1999

Item	65 Grazing Dairy Farms	13 Above Average Farms	16 Below Average Farms
Net farm income without appreciation	\$ 42,858	\$ 48,940	\$ 21,516
Family labor unpaid @ \$1,800 per month	- 6,480	- 4,140	- 6,840
Interest on average equity capital @ 5% real rate	- 17,762	- 11,302	- 18,131
Labor & Management Income per farm	\$ 18,616	\$ 33,498	\$ -3,455
Labor & Management Income per Operator/Manager	\$ 13,203	\$ 26,586	\$ -3,199
Labor & Management Income per Operator per Cow	\$ 167	\$ 502	\$ -35

Labor and management income per operator averaged \$13,203 on these 65 farms in 1999. The range in labor and management income per operator was from less than \$-51,000 to more than \$71,000. Returns to labor and management were less than \$10,000 on 46 percent of the farms. Labor and management income per operator was between \$10,000 and \$30,000 on 32 percent of the farms while 22 percent showed labor and management incomes of \$30,000 or more per operator.

DISTRIBUTION OF LABOR & MANAGEMENT INCOMES PER OPERATOR

65 Intensive Grazing Dairy Farms, 1999



The distribution of labor and management income per operator on grazing farms is very similar to the distribution for all farms across the state that participate in the DFBS project. The largest percentage of farms fall near \$0 to \$20,000 with a considerable percentage less than zero. One comparison to make to the state distribution is the percentage of farms that were above \$20,000 labor and management income per operator. For the intensive grazing farms, 33% of the farms had returns that were over \$20,000, while for the 314 farms across the state, 48% had returns greater than \$20,000 in 1999.

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. Net farm income from operations ratio is net farm income (without appreciation) divided by total accrual receipts.

RETURN ON EQUITY CAPITAL AND RETURN ON TOTAL CAPITAL
Intensive Grazing Dairy Farms, 1999

Item	65 Grazing Dairy Farms	13 Above Average Farms	16 Below Average Farms
Net farm income with appreciation	\$ 52,851	\$ 59,756	\$ 35,529
Family labor unpaid @\$1,800 per month	- 6,480	- 4,140	- 6,840
Value of operators' labor & management	<u>- 33,354</u>	<u>- 27,769</u>	<u>- 30,813</u>
Return on equity capital with appreciation	\$ 13,017	\$ 27,847	\$ -2,124
Interest paid	<u>+ 8,741</u>	<u>+ 6,053</u>	<u>+ 12,623</u>
Return on total capital with appreciation	\$ 21,758	\$ 33,900	\$ 10,499
Return on equity capital without appreciation	\$ 3,024	\$ 17,031	\$ -16,137
Return on total capital without appreciation	\$ 11,765	\$ 23,084	\$ -3,514
Rate of return on average equity capital:			
with appreciation	3.7%	12.3%	-0.6%
without appreciation	0.9%	7.5%	-4.5%
Rate of return on average total capital:			
with appreciation	4.4%	10.9%	1.9%
without appreciation	2.4%	7.4%	-0.6%
Net farm income from operations ratio	0.18	0.30	0.08

Farm and Family Financial Status

The first step in evaluating the financial position of the farm is to construct a balance sheet which identifies and values 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 1999, lease payments were discounted by 8.5 percent to obtain their present value.

Advanced government receipts are included as current liabilities. Government payments received in 1999 that are for participation in the 2000 program are the end year balance and payments received in 1998 for participation in the 1999 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.

1999 FARM BUSINESS & NONFARM BALANCE SHEET
65 Intensive Grazing Dairy Farms, 1999

Farm Assets	Jan. 1	Dec. 31	Farm Liabilities & Net Worth	Jan. 1	Dec. 31
<u>Current</u>			<u>Current</u>		
Farm cash, checking & savings	\$ 12,036	\$ 12,345	Accounts payable	\$ 4,255	\$ 3,913
Accounts receivable	19,981	15,526	Operating debt	5,807	3,729
Prepaid expenses	339	269	Short Term	1,807	1,676
Feed & supplies	35,981	37,035	Advanced govt. receipts	8	7
			Current Portion:		
			Intermediate	12,822	14,407
			Long Term	<u>3,462</u>	<u>2,924</u>
Total Current	\$ 68,337	\$ 65,175	Total Current	\$ 28,162	\$ 26,656
<u>Intermediate</u>			<u>Intermediate</u>		
Dairy cows:			Structured debt		
owned	\$ 80,983	\$ 84,511	1-10 years	\$ 56,348	\$ 56,699
leased	963	475	Financial lease		
Heifers	35,573	38,818	(cattle/machinery)	2,396	2,062
Bulls & other livestock	858	1,034	Farm Credit stock	<u>1,220</u>	<u>1,081</u>
Mach. & equip. owned	96,004	104,947	Total Intermediate	\$ 59,964	\$ 59,842
Mach. & equip. leased	1,433	1,587			
Farm Credit stock	1,220	1,081			
Other stock/certificate	<u>2,977</u>	<u>3,074</u>			
Total Intermediate	\$ 220,011	\$ 235,527			
<u>Long Term</u>			<u>Long Term</u>		
Land & buildings:			Structured debt		
owned	\$ 198,453	\$ 197,752	>10 years	\$ 52,247	\$ 47,887
leased	<u>0</u>	<u>0</u>	Financial lease		
Total Long Term	\$ 198,453	\$ 197,752	(structures)	<u>0</u>	<u>0</u>
			Total Long Term	\$ 52,247	\$ 47,887
Total Farm Assets	\$ 486,801	\$ 498,454	Total Farm Liab.	\$ 140,373	\$ 134,385
			FARM NET WORTH	\$ 346,428	\$ 364,069

Nonfarm Assets, Liabilities & Net Worth (Average of 38 farms reporting)

Assets	Jan. 1	Dec. 31	Liabilities & Net Worth	Jan. 1	Dec. 31
Personal cash, checking & savings	\$ 4,901	\$ 3,926	Nonfarm Liabilities	\$ 4,908	\$ 4,577
Cash value life insurance	8,154	9,362			
Nonfarm real estate	19,029	16,608			
Auto (personal share)	4,205	4,414			
Stocks & bonds	8,170	12,981			
Household furnishings	10,029	11,082			
All other nonfarm assets	<u>5,550</u>	<u>6,571</u>			
Total Nonfarm Assets	\$ 60,038	\$ 64,944	NONFARM NET WORTH	\$ 55,130	\$ 60,367

Farm & Nonfarm Assets, Liabilities, and Net Worth*	Jan. 1	Dec. 31
Total Assets	\$ 546,839	\$ 563,398
Total Liabilities	<u>145,281</u>	<u>138,962</u>
TOTAL FARM & NONFARM NET WORTH	\$ 401,558	\$ 424,436

*Assumes that average nonfarm assets and liabilities for the nonreporting farms were the same as for those reporting.

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. The leverage ratio is the dollars of debt per dollar of equity, computed by dividing total farm liabilities by farm net worth. Debt levels per productive unit represent old standards that are still useful if used with measures of cash flow and repayment ability. A current ratio of less than 1.5 or that has been falling warrants additional evaluation. The amount of working capital that is adequate must be related to the size of the farm business.

BALANCE SHEET ANALYSIS
Intensive Grazing Dairy Farms, 1999

Item	65 Grazing Dairy Farms		13 Above Average Farms		16 Below Average Farms	
<u>Financial Ratios - Farm:</u>						
Percent equity	73%		75%		65%	
Debt/asset ratio: total	0.27		0.25		0.35	
long-term	0.24		0.33		0.31	
intermediate/current	0.29		0.21		0.39	
Leverage Ratio	0.37		0.34		0.54	
Current Ratio	2.45		2.05		1.27	
Working Capital: \$38,519, As % of Expenses	19%		(\$18,402) 16%		(\$11,926) 5%	
<u>Farm Debt Analysis:</u>						
Accounts payable as % of total debt	3%		2%		4%	
Long-term liabilities as a % of total debt	36%		45%		35%	
Current & inter. liabilities as a % of total debt	64%		55%		65%	
Cost of term debt (weighted average)	7.0%		6.5%		7.3%	
	65 Grazing Dairy Farms		13 Above Average Farms		16 Below Average Farms	
	Per Tillable Acre		Per Tillable Acre		Per Tillable Acre	
	Per Cow	Owned	Per Cow	Owned	Per Cow	Owned
<u>Farm Debt Levels:</u>						
Total farm debt	\$ 1,680	\$ 1,102	\$ 1,508	\$ 1,429	\$ 2,096	\$ 1,359
Long-term debt	599	393	683	647	741	480
Intermediate & long term	1,347	883	1,185	1,122	1,634	1,059
Intermediate & current debt	1,081	709	826	782	1,355	879

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
65 Intensive Grazing Dairy Farms, 1999

Item	Real Estate		Machinery & Equipment	
Value beginning of year	\$ 198,453		\$ 96,004	
Purchases	\$ 8,581*		\$ 21,169	
Gift & inheritance	+ 428		+ 218	
Lost capital	- 5,378			
Sales	- 1,672		- 1,330	
Depreciation	- 5,824		- 13,861	
Net investment	=	-3,865	=	6,196
Appreciation	+ 3,164		+ 2,747	
Value end of year	\$ 197,752		\$ 104,947	

*\$145 land and \$8,436 building and/or depreciable improvements.

The Statement of Owner Equity has two purposes. It allows (1) verification that the accrual income statement and market value balance sheet are 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) , (3) increases or decreases in the value (price) of assets owned by the business (called change in valuation equity), and (4) the error in the business cash flow accounting.

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

STATEMENT OF OWNER EQUITY (RECONCILIATION)
Intensive Grazing Dairy Farms, 1999

Item	65 Grazing Dairy Farms	13 Above Average Farms	16 Below Average Farms
Beginning of year farm net worth	\$ 346,428	\$ 212,361	\$ 363,400
Net farm income w/o appreciation	\$ 42,858	\$ 48,940	\$ 21,516
+Nonfarm cash income	+ 4,222	+ 3,796	+ 7,836
-Personal withdrawals & family expenditures excluding nonfarm borrowings	- 35,691	- 35,919	- 33,957
RETAINED EARNINGS	+\$ 11,389	+\$ 16,817	+\$ -4,605
Nonfarm noncash transfers to farm	\$ 646	\$ 1,418	\$ 625
+Cash used in business from nonfarm capital	+ 763	+ 469	+ 719
-Note or mortgage from farm real estate sold (nonfarm)	- 0	- 0	- 0
CONTRIBUTED/ WITHDRAWN CAPITAL	+\$ 1,409	+\$ 1,887	+\$ 1,344
Appreciation	\$ 9,993	\$ 10,816	\$ 14,013
-Lost capital	- 5,378	- 1,870	- 12,652
CHANGE IN VALUATION EQUITY	+\$ 4,615	+\$ 8,946	+\$ 1,361
IMBALANCE/ERROR	- \$-228	- \$312	- \$-342
End of year net worth*	=\$364,069	=\$239,699	=\$361,842
<u>Change in Net Worth</u>			
Without appreciation	\$ 7,648	\$ 16,522	\$ -15,571
With appreciation	\$ 17,641	\$ 27,338	\$ -1,558

*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. You should be aware that all profitability measures may be affected by this error.

ANNUAL CASH FLOW STATEMENT
65 Intensive Grazing Dairy Farms, 1999

Item	Average	
<u>Cash Flow from Operating Activities</u>		
Cash farm receipts	\$ 246,301	
- Cash farm expenses	<u>181,338</u>	
= Net cash farm income		\$ 64,963
Personal withdrawals & family expenses including nonfarm debt payments	\$ 35,627	
- Nonfarm income	<u>4,222</u>	
- Net cash withdrawals from the farm		<u>\$ 31,405</u>
= Net Provided by Operating Activities		\$ 33,558
<u>Cash Flow From Investing Activities</u>		
Sale of assets: machinery	\$ 1,330	
+ real estate	1,672	
+ other stock & cert.	<u>83</u>	
= Total asset sales		\$ 3,085
Capital purchases: expansion livestock	\$ 2,233	
+ machinery	21,169	
+ real estate	8,581	
+ other stock & cert.	<u>107</u>	
- Total invested in farm assets		<u>\$ 32,090</u>
= Net Provided by Investment Activities		\$ -29,005
<u>Cash Flow From Financing Activities</u>		
Money borrowed (intermediate & long term)	\$ 20,905	
+ Money borrowed (short term)	813	
+ Increase in operating debt	0	
+ Cash from nonfarm capital used in business	763	
+ Money borrowed - nonfarm	<u>-64</u>	
= Cash inflow from financing		\$ 22,417
Principal payments (intermediate & long term)	\$ 23,866	
+ Principal payments (short term)	945	
+ Decrease in operating debt	<u>2,079</u>	
- Cash outflow for financing		<u>\$ 26,890</u>
= Net Provided by Financing Activities		\$ -4,473
<u>Cash Flow From Reserves</u>		
Beginning farm cash, checking & savings		\$ 12,036
- Ending farm cash, checking & savings		<u>12,345</u>
= Net Provided from Reserves		\$ -309
Imbalance (error)		\$ -229

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 2000. The cash flow projection worksheet on the next page can be used to estimate repayment ability, which can then be compared to planned 2000 debt payments shown below.

FARM DEBT PAYMENTS PLANNED Same Intensive Grazing Dairy Farms, 1998 & 1999

Debt Payments	Same 46 Grazing			Same 10 Above Average Farms			Same 14 Below Average Farms		
	1999 Payments		Planned 2000	1999 Payments		Planned 2000	1999 Payments		Planned 2000
	Planned	Made		Planned	Made		Planned	Made	
Long term	\$ 9,590	\$ 10,075	\$ 7,789	\$ 9,112	\$ 7,965	\$ 6,973	\$ 10,326	\$ 8,994	\$ 7,828
Intermediate term	21,713	26,180	21,887	13,248	15,964	10,110	25,138	27,848	31,908
Short term	1,802	722	781	0	0	0	4,473	0	2,270
Operating (net reduction)	1,971	2,571	884	1,566	93	1,301	3,790	5,528	696
Accounts Pay. (net reduction)	710	0	229	605	395	0	786	0	220
Total	\$ 35,786	\$ 39,548	\$ 31,570	\$ 24,531	\$ 24,417	\$ 18,384	\$ 44,513	\$ 42,370	\$ 42,922
Per cow	\$ 442	\$ 488		\$ 472	\$ 470		\$ 454	\$ 432	
Per cwt. 1999 milk	\$ 2.39	\$ 2.64		\$ 2.57	\$ 2.56		\$ 2.54	\$ 2.42	
Percent of total 1999 farm receipts	14%	16%		15%	15%		16%	15%	
Percent of 1999 milk receipts	16%	18%		17%	17%		18%	17%	

The coverage ratios measure the ability of the farm business to meet its planned debt payment schedule. The ratios show the percentage of payments planned for 1999 (as of December 31, 1998) that could have been made with the amount available for debt service in 1999. Farmers who did not participate in DFBS in 1998 have their 1999 coverage ratios based on planned debt payments for 2000.

COVERAGE RATIOS Same Intensive Grazing Dairy Farms, 1998 & 1999

Item	Average	Item	Average
Same 46 Grazing Dairy Farms, 1998 & 1999			
(A)=Amount Available for Debt Service	\$ 46,408	(A')=Repayment Capacity	\$ 41,494
(B)=Debt Payments Planned for 1999	\$ 35,786	(B)=Debt Payments Planned for 1999	\$ 35,786
(A/B)=Cash Flow Coverage Ratio for 1999	1.30	(A'/B)=Debt Coverage Ratio for 1999	1.16

Same 10 Above Average Farms, 1998 & 1999			
(A)=Amount Available for Debt Service	\$ 34,397	(A')=Repayment Capacity	\$ 37,428
(B)=Debt Payments Planned for 1999	\$ 24,531	(B)=Debt Payments Planned for 1999	\$ 24,531
(A/B)=Cash Flow Coverage Ratio for 1999	1.40	(A'/B)=Debt Coverage Ratio for 1999	1.53

Same 14 Below Average Farms, 1998 & 1999			
(A)=Amount Available for Debt Service	\$ 54,358	(A')=Repayment Capacity	\$ 37,954
(B)=Debt Payments Planned for 1999	\$ 44,513	(B)=Debt Payments Planned for 1999	\$ 44,513
(A/B)=Cash Flow Coverage Ratio for 1999	1.22	(A'/B)=Debt Coverage Ratio for 1999	0.85

*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
Intensive Grazing Dairy Farms, 1999

Item	65 Grazing Dairy Farms		13 Above Average Farms		16 Below Average Farms	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average no. of cows	79		53		92	
Total cwt. of milk sold		14,477		9,838		16,551
<u>Accrual Oper. Receipts</u>						
Milk	\$ 2,721	\$ 14.85	\$ 2,775	\$ 14.95	\$ 2,592	\$ 14.41
Dairy cattle	176	0.96	195	1.05	202	1.12
Dairy calves	23	0.13	32	0.17	14	0.08
Other livestock	18	0.10	1	0.00	40	0.22
Crops	-19	-0.10	-13	-0.07	-61	-0.34
Misc. Receipts	<u>152</u>	<u>0.83</u>	<u>127</u>	<u>0.68</u>	<u>115</u>	<u>0.64</u>
Total	\$ 3,072	\$ 16.76	\$ 3,116	\$ 16.79	\$ 2,902	\$ 16.13
<u>Accrual Operating Expenses</u>						
Hired labor	\$ 235	\$ 1.28	\$ 131	\$ 0.71	\$ 308	\$ 1.71
Dairy grain & concentrate	620	3.38	594	3.20	580	3.22
Dairy roughage	50	0.27	88	0.47	54	0.30
Nondairy feed	1	0.00	0	0.00	0	0.00
Mach. hire, rent & lease	68	0.37	30	0.16	46	0.25
Mach. repair & vehicle expense	186	1.02	144	0.77	210	1.17
Fuel, oil & grease	52	0.28	49	0.26	52	0.29
Replacement livestock	46	0.25	28	0.15	114	0.63
Breeding	40	0.22	28	0.15	30	0.17
Vet & medicine	68	0.37	47	0.26	60	0.33
Milk marketing	110	0.60	138	0.75	94	0.52
Bedding	14	0.08	17	0.09	17	0.10
Milking supplies	73	0.40	62	0.33	58	0.32
Cattle lease	12	0.06	0	0.00	13	0.07
Custom boarding	6	0.03	0	0.00	7	0.04
bST expense	20	0.11	6	0.03	27	0.15
Other livestock expense	43	0.23	39	0.21	42	0.24
Fertilizer & lime	70	0.38	46	0.25	83	0.46
Seeds & plants	34	0.19	23	0.12	37	0.20
Spray & other crop expense	31	0.17	23	0.12	21	0.12
Land, bldg., fence repair	67	0.36	53	0.28	58	0.32
Taxes	59	0.32	57	0.31	61	0.34
Real estate rent & lease	69	0.38	82	0.44	36	0.20
Insurance	53	0.29	45	0.24	43	0.24
Utilities	79	0.43	93	0.50	75	0.42
Miscellaneous	<u>41</u>	<u>0.22</u>	<u>31</u>	<u>0.17</u>	<u>48</u>	<u>0.27</u>
Total Less Interest Paid	\$ 2,146	\$ 11.71	\$ 1,854	\$ 9.99	\$ 2,173	\$ 12.08
<u>Net Accrual Operating Income</u>		<u>Total</u>		<u>Total</u>		<u>Total</u>
(without interest paid)		\$ 73,163		\$ 66,900		\$ 67,055
- Change in livestock & crop invent.*		838		3,690		-2,689
- Change in accounts receivable		-4,454		-4,393		7,674
- Change in feed & supply inventory**		3,085		2,776		1,483
+ Change in accounts payable***		<u>-162</u>		<u>50</u>		<u>1,071</u>
NET CASH FLOW		\$ 73,531		\$ 64,877		\$ 77,007
- Net family withdrawals		<u>- 31,469</u>		<u>- 32,123</u>		<u>- 26,121</u>
Available for Farm		\$ 42,062		\$ 32,754		\$ 50,886
- Farm debt payments		<u>- 35,318</u>		<u>- 24,508</u>		<u>- 40,855</u>
Available for Farm Investment		\$ 6,744		\$ 8,246		\$ 10,031
- Capital purchases		\$ 32,090		\$ 22,749		\$ 57,945
Additional Capital Needed		\$ 25,346		\$ 14,503		\$ 47,914

*Includes change in advance government receipts. **Includes change in prepaid expenses. ***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 Intensive Grazing Dairy Farms, 1999

Item	65 Grazing Dairy Farms			13 Above Average Farms			16 Below Average Farms		
	<u>Owned</u>	<u>Rented</u>	<u>Total</u>	<u>Owned</u>	<u>Rented</u>	<u>Total</u>	<u>Owned</u>	<u>Rented</u>	<u>Total</u>
<u>Land</u>									
Tillable	122	105	227	57	98	154	145	110	255
Nontillable	27	20	47	28	25	52	23	5	29
Other nontill.	<u>66</u>	<u>21</u>	<u>87</u>	<u>77</u>	<u>49</u>	<u>125</u>	<u>70</u>	<u>3</u>	<u>72</u>
Total	215	146	361	161	171	332	237	118	355
<u>Crop Yields</u>	<u>Farms</u>	<u>Acres*</u>	<u>Prod/Acre</u>	<u>Farms</u>	<u>Acres*</u>	<u>Prod/Acre</u>	<u>Farms</u>	<u>Acres*</u>	<u>Prod/Acre</u>
Hay crop	62	126	2.1 tn DM	11	105	1.7 tn DM	16	124	2.7 tn DM
Corn silage	50	55	13.9 tn 4.6 tn DM	9	32	14.5 tn 4.8 tn DM	9	62	12.4 tn 4.0 tn DM
Other forage	8	42	1.5 tn DM	3	20	1.1 tn DM	1	124	0.6 tn DM
Total forage	63	173	2.7 tn DM	12	125	2.2 tn DM	16	167	2.8 tn DM
Corn grain	12	45	70 bu	0	0	0 bu	3	10	77 bu
Oats	5	11	47 bu	2	8	60 bu	0	0	0 bu
Wheat	1	50	70 bu	0	0	0 bu	1	50	70 bu
Other crops	10	19		2	7		3	22	
Tillable pasture	43	63		10	45		10	111	
Idle	12	27		2	11		6	25	
Total Tillable Acres	65	227		13	154		16	255	

*This column represents the average acreage for the farms producing that crop. For the 65 New York dairy farms, average acreages including those farms not producing were hay crop 120, corn silage 42, corn grain 8, oats 1, wheat 1, tillable pasture 42, and idle 5.

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 Intensive Grazing Dairy Farms, 1999

Item	65 Grazing Dairy Farms	13 Above Average Farms	16 Below Average Farms
Total tillable acres per cow	2.87	2.91	2.77
Total forage acres per cow	2.11	2.19	1.82
Harvested forage dry matter, tons per cow	5.80	4.89	5.14

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 used by all farms reported in the below tables.

CROP RELATED ACCRUAL EXPENSES
Intensive Grazing Dairy Farms Reporting, 1999

Item	Total Per Till. Acre	All Corn Per Acre	Corn Silage Per Ton DM	Corn Grain Per Dry Sh. Bu.	Hay Crop		Pasture	
					Per Acre	Per Ton DM	Per Till Acre	Per Total Acre
All Grazing Farms								
No. of farms reporting	65	11			9		6	
Ave. number of acres	227	69			200		34	113
Fert. & lime	\$ 24.51	\$ 58.67	\$ 12.88	\$ 0.56	\$ 19.56	\$ 15.34	\$ 37.62	\$ 11.32
Seeds & plants	11.95	28.83	6.33	0.28	7.50	5.88	23.24	6.99
Spray & other	<u>10.72</u>	<u>31.42</u>	<u>6.90</u>	<u>0.30</u>	<u>0.50</u>	<u>0.39</u>	<u>0.00</u>	<u>0.00</u>
TOTAL	\$ 47.18	\$ 118.92	\$ 26.11	\$ 1.14	\$ 27.56	\$ 21.61	\$ 60.86	\$ 18.31
Above Average Grazing Farms								
No. of farms reporting	13	-----NONE REPORTED-----						
Ave. number of acres	154							
Fert. & lime	\$ 15.71							
Seeds & plants	7.87							
Spray & other	<u>7.81</u>							
TOTAL	\$ 31.39							
Below Average Grazing Farms								
No. of farms reporting	16	3			3		2	
Ave. number of acres	255	56			89		50	92
Fert. & lime	\$ 30.04	\$ 35.45	\$ 8.67	\$ 0.00	\$ 15.15	\$ 4.08	\$ 25.22	\$ 13.71
Seeds & plants	13.21	23.77	5.81	0.00	14.88	4.01	39.32	21.37
Spray & other	<u>7.75</u>	<u>22.59</u>	<u>5.52</u>	<u>0.00</u>	<u>1.88</u>	<u>0.51</u>	<u>0.00</u>	<u>0.00</u>
TOTAL	\$ 51.00	\$ 81.81	\$ 20.00	\$ 0.00	\$ 31.91	\$ 8.60	\$ 64.54	\$ 35.08

Most machinery costs are associated 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
Intensive Grazing Dairy Farms, 1999

Machinery Expense	65 Grazing Dairy		13 Above Average Farms		16 Below Average Farms	
	Total Expenses	Per Till. Acre	Total Expenses	Per Till. Acre	Total Expenses	Per Till. Acre
Fuel, oil & grease	\$ 4,081	\$ 17.98	\$ 2,588	\$ 16.81	\$ 4,760	\$ 18.67
Mach. repair & vehicle exp.	14,698	64.75	7,623	49.50	19,310	75.73
Machine hire, rent & lease	5,346	23.55	1,612	10.47	4,206	16.49
Interest (5%)	5,099	22.46	3,609	23.44	5,812	22.79
Depreciation	<u>13,861</u>	<u>61.06</u>	<u>9,835</u>	<u>63.86</u>	<u>18,543</u>	<u>72.72</u>
Total	\$ 43,085	\$ 189.80	\$ 25,267	\$ 164.07	\$ 52,631	\$ 206.40

Dairy Analysis

Analysis of the dairy enterprise can reveal 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 16 and 17.

DAIRY HERD INVENTORY
Intensive Grazing Dairy Farms, 1999

Item	Dairy Cows		Bred Heifers		Open Heifers		Calves	
	No.	Value	No.	Value	No.	Value	No.	Value
65 Grazing Dairy Farms								
Beg. year (owned)	76	\$ 80,983	22	\$ 19,703	21	\$ 11,535	16	\$ 4,335
+ Change w/o apprec.		1,267		1,538		-113		102
+ Appreciation		<u>2,261</u>		<u>889</u>		<u>542</u>		<u>287</u>
End year (owned)	77	\$ 84,511	24	\$ 22,130	21	\$ 11,964	17	\$ 4,724
End including leased	80							
Average number	79		60	(all age groups)				
13 Above Average Dairy Farms								
Beg. year (owned)	53	\$ 59,269	12	\$ 11,954	14	\$ 7,635	11	\$ 2,754
+ Change w/o apprec.		2,096		4,719		-1,827		-323
+ Appreciation		<u>4,635</u>		<u>792</u>		<u>754</u>		<u>404</u>
End year (owned)	54	\$ 66,000	17	\$ 17,465	11	\$ 6,562	10	\$ 2,835
End including leased	54							
Average number	53		38	(all age groups)				
16 Below Average Dairy Farms								
Beg. year (owned)	93	\$ 94,610	28	\$ 24,656	24	\$ 12,646	16	\$ 4,316
+ Change w/o apprec.		-1,674		3,832		-94		634
+ Appreciation		<u>2,969</u>		<u>481</u>		<u>431</u>		<u>294</u>
End year (owned)	91	\$ 95,905	32	\$ 28,969	24	\$ 12,983	18	\$ 5,244
End including leased	94							
Average number	92		73	(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.

MILK PRODUCTION
Intensive Grazing Dairy Farms, 1999

Item	65 Grazing Dairy Farms	13 Above Average Dairy Farms	16 Below Average Dairy Farms
Total milk sold, lbs.	1,447,650	983,756	1,655,115
Milk sold per cow, lbs.	18,346	18,454	17,905
Average milk plant test, percent butterfat	3.68%	3.63%	3.65%

Monitoring and evaluating culling practices and experiences on an annual basis are important herd management tools. Culling rate can have an affect on both milk per cow and profitability.

ANIMALS LEAVING THE HERD
Intensive Grazing Dairy Farms, 1999

Item	65 Grazing Dairy Farms		13 Above Average Dairy Farms		16 Below Average Dairy Farms	
	Number	Percent*	Number	Percent*	Number	Percent*
Cows sold for beef	17	21.5	12	22.6	24	26.1
Cows sold for dairy	4	5.1	1	1.9	6	6.5
Cows died	3	3.8	2	3.8	3	3.3
Culling rate**		25.3		26.4		29.3

*Percent of average number of cows in the herd. **Cows sold for beef plus cows died.

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, COSTS OF PRODUCING MILK,
AND PROFITABILITY**

Intensive Grazing Dairy Farms, 1999

Item	65 Grazing Dairy Farms		13 Above Average Dairy Farms		16 Below Average Dairy Farms	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
<u>Accrual Cost of Producing Milk</u>						
Operating costs	\$ 1,930	\$ 10.53	\$ 1,627	\$ 8.76	\$ 2,049	\$ 11.39
Purchased inputs costs	\$ 2,179	\$ 11.89	\$ 1,851	\$ 9.97	\$ 2,358	\$ 13.11
Total Costs	\$ 2,908	\$ 15.87	\$ 2,667	\$ 14.37	\$ 2,965	\$ 16.48
<u>Accrual Receipts From Milk</u>						
Net milk receipts	\$ 2,721	\$ 14.85	\$ 2,775	\$ 14.95	\$ 2,592	\$ 14.41
Net Farm Income without Apprec.	\$ 2,612	\$ 14.25	\$ 2,637	\$ 14.20	\$ 2,498	\$ 13.89
Net Farm Income with Apprec.	\$ 543	\$ 2.96	\$ 923	\$ 4.97	\$ 234	\$ 1.30
	\$ 669	\$ 3.65	\$ 1,127	\$ 6.07	\$ 386	\$ 2.15

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

Intensive Grazing Dairy Farms, 1999

Item	65 Grazing Dairy Farms		13 Above Average Dairy Farms		16 Below Average Dairy Farms	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Purchased dairy grain & concentrate	\$ 620	\$ 3.38	\$ 594	\$ 3.20	\$ 580	\$ 3.22
Purchased dairy roughage	50	0.27	88	0.47	54	0.30
Total Purchased Dairy Feed	\$ 670	\$ 3.65	\$ 682	\$ 3.67	\$ 634	\$ 3.52
Purchased grain & conc. as % of milk receipts		23%		21%		22%
Purchased feed & crop exp.	\$ 805	\$ 4.39	\$ 773	\$ 4.16	\$ 775	\$ 4.31
Purchased feed & crop exp. as % of milk receipts		30%		28%		30%
Breeding	\$ 40	\$ 0.22	\$ 28	\$ 0.15	\$ 30	\$ 0.17
Veterinary & medicine	68	0.37	47	0.26	60	0.33
Milk marketing	110	0.60	138	0.75	94	0.52
Bedding	14	0.08	17	0.09	17	0.10
Milking supplies	73	0.40	62	0.33	58	0.32
Cattle lease	12	0.06	0	0.00	13	0.07
Custom boarding	6	0.03	0	0.00	7	0.04
bST expense	20	0.11	6	0.03	27	0.15
Other livestock expense	43	0.23	39	0.21	42	0.24

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
Intensive Grazing Dairy Farms, 1999

Item	Per Worker	Per Cow	Per Tillable Acre	Per Tillable Acre Owned
<u>65 Grazing Dairy Farms</u>				
Farm capital	\$ 187,311	\$ 6,236	\$ 2,170	\$ 4,038
Real estate		2,508		1,624
Machinery & equipment	38,778	1,291	449	
<u>Ratios:</u>				
Asset Turnover Ratio	Operating Expense		Interest Expense	Depreciation Expense
0.51	0.71		0.04	0.08
<u>13 Above Average Dairy Farms</u>				
Farm capital	\$ 154,963	\$ 5,877	\$ 2,023	\$ 5,464
Real estate		2,075		1,930
Machinery & equipment	35,910	1,362	469	
<u>Ratios:</u>				
Asset Turnover Ratio	Operating Expense		Interest Expense	Depreciation Expense
0.56	0.59		0.04	0.07
<u>16 Below Average Dairy Farms</u>				
Farm capital	\$ 198,168	\$ 6,010	\$ 2,168	\$ 3,813
Real estate		2,471		1,568
Machinery & equipment	41,664	1,264	456	
<u>Ratios:</u>				
Asset Turnover Ratio	Operating Expense		Interest Expense	Depreciation Expense
0.51	0.77		0.05	0.11

Capital and Labor Efficiency Analysis (continued)**LABOR FORCE INVENTORY AND ANALYSIS**

Intensive Grazing Dairy Farms, 1999

Labor Force	Months	Age	Years of Educ.	Value of Labor & Mgmt.
<u>65 Grazing Dairy Farms</u>				
Operator number 1	13.7	44	14	\$ 26,515
Operator number 2	2.9	45	13	5,300
Operator number 3	0.9	45	14	1,539
Family paid	2.9			
Family unpaid	3.6			
Hired	<u>7.6</u>			
Total	31.6	/ 12 = 2.63 Worker Equivalent 1.41 Operator/Manager Equivalent		
<u>13 Above Average Dairy Farms</u>				
Total Labor Force	24.1	/ 12 = 2.01 Worker Equivalent		
Operator's Labor		1.26 Operator/Manager Equivalent		
<u>16 Below Average Dairy Farms</u>				
Total Labor Force	33.5	/ 12 = 2.79 Worker Equivalent		
Operator's Labor		1.08 Operator/Manager Equivalent		

Labor Efficiency	65 Grazing Dairy Farms		13 Above Average Dairy Farms		16 Below Average Dairy Farms	
	Total	Per Worker	Total	Per Worker	Total	Per Worker
Cows, average number	79	30	53	26	92	33
Milk sold, pounds	1,447,650	550,437	983,756	489,431	1,655,115	593,231
Tillable acres	227	86	154	77	255	91
Work units	794	302	526	262	910	326

Labor Costs	65 Grazing Dairy Farms		13 Above Average Dairy Farms		16 Below Average Dairy Farms	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Value of operator(s) labor (\$1,800/mo.)	\$ 399	\$ 2.18	\$ 588	\$ 3.17	\$ 299	\$ 1.66
Family unpaid (\$1,800/mo.)	82	0.45	78	0.42	74	0.41
Hired	<u>235</u>	<u>1.28</u>	<u>131</u>	<u>0.71</u>	<u>308</u>	<u>1.71</u>
Total Labor	\$ 715	\$ 3.90	\$ 797	\$ 4.29	\$ 682	\$ 3.78
Machinery Cost	\$ <u>545</u>	\$ <u>2.98</u>	\$ <u>477</u>	\$ <u>2.57</u>	\$ <u>572</u>	\$ <u>3.18</u>
Total Labor & Mach.	\$ 1,260	\$ 6.88	\$ 1,274	\$ 6.86	\$ 1,254	\$ 6.96
Hired labor expense per hired worker equivalent	\$ 21,189		\$ 18,971		\$ 23,608	
Hired labor expense as % of milk sales	8.6%		4.7%		11.9%	

COMPARATIVE ANALYSIS OF THE FARM BUSINESS

Progress of the Farm Business

Comparing your business with average data from regional DFBS cooperators that participated in both of the last two years can be helpful to establishing your goals for these parameters. 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.

PROGRESS OF THE FARM BUSINESS Same Intensive Grazing Dairy Farms, 1998 & 1999

Selected Factors	Same 46 Grazing Dairy Farms		Same 10 Above Average Dairy Farms		Same 14 Below Average Dairy Farms	
	1998	1999	1998	1999	1998	1999
<u>Size of Business</u>						
Average number of cows	81	81	50	52	100	98
Average number of heifers	62	64	32	35	77	79
Milk sold, lbs.	1,452,815	1,499,123	902,836	953,127	1,684,540	1,751,958
Worker equivalent	2.62	2.63	1.93	1.83	2.83	2.84
Total tillable acres	233	230	150	145	277	272
<u>Rates of Production</u>						
Milk sold per cow, lbs.	17,883	18,523	18,093	18,471	16,774	17,825
Hay DM per acre, tons	2.6	2.3	2.0	1.7	2.6	2.7
Corn silage per acre, tons	15.8	14.8	13.5	13.4	15.3	12.2
<u>Labor Efficiency</u>						
Cows per worker	31	31	26	28	35	35
Milk sold/worker, lbs.	554,510	570,009	467,791	520,834	595,244	616,887
<u>Cost Control</u>						
Grain & conc. purchased as % of milk sales	22%	23%	23%	21%	24%	22%
Dairy feed & crop exp. per cwt. milk	\$ 4.47	\$ 4.36	\$ 4.49	\$ 4.25	\$ 4.66	\$ 4.31
Labor & mach. costs/cow	\$ 1,082	\$ 1,244	\$ 1,137	\$ 1,201	\$ 970	\$ 1,238
Operating cost of producing cwt. of milk	\$ 10.23	\$ 10.61	\$ 9.64	\$ 9.05	\$ 10.02	\$ 11.40
<u>Capital Efficiency**</u>						
Farm capital per cow	\$ 6,301	\$ 6,555	\$ 6,354	\$ 6,020	\$ 5,489	\$ 5,758
Mach. & equip. per cow	\$ 1,215	\$ 1,335	\$ 1,252	\$ 1,339	\$ 1,072	\$ 1,223
Asset turnover ratio	0.51	0.49	0.52	0.55	0.57	0.52
<u>Profitability</u>						
Net farm income w/o apprec.	\$ 59,547	\$ 42,034	\$ 44,536	\$ 45,279	\$ 70,206	\$ 20,864
Net farm income w/apprec.	\$ 68,188	\$ 53,208	\$ 51,595	\$ 57,139	\$ 79,724	\$ 35,075
Labor & mgt. income per operator/manager	\$ 28,329	\$ 13,798	\$ 25,881	\$ 27,559	\$ 42,923	\$ -3,889
Rate of return on equity capital w/appreciation	8.5%	3.9%	9.6%	12.7%	12.5%	-0.7%
Rate of return on all capital w/appreciation	8.3%	4.5%	8.8%	11.0%	11.2%	1.9%
<u>Financial Summary</u>						
Farm net worth, end year	\$ 369,339	\$ 391,545	\$ 216,689	\$ 239,197	\$ 378,982	\$ 369,713
Debt to asset ratio	0.29	0.27	0.34	0.26	0.33	0.35
Farm debt per cow	\$ 1,874	\$ 1,787	\$ 2,110	\$ 1,617	\$ 1,841	\$ 2,036

*Farms participating both years.

**Average for the year.

RECEIPTS AND EXPENSES PER COW AND PER CWT.
Same 46 Intensive Grazing Dairy Farms, 1998 & 1999

Item	1998		1999	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average Number of Cows	81		81	
Cwt. Of Milk Sold		14,528		14,991
<u>ACCRUAL OPERATING RECEIPTS</u>				
Milk	\$ 2,781	\$ 15.51	\$ 2,756	\$ 14.89
Dairy cattle	150	0.84	179	0.97
Dairy calves	25	0.14	22	0.12
Other livestock	16	0.09	24	0.13
Crops	58	0.32	-25	-0.14
Miscellaneous receipts	87	0.48	139	0.75
Total Receipts	\$ 3,117	\$ 17.38	\$ 3,095	\$ 16.72
<u>ACCRUAL OPERATING EXPENSES</u>				
Hired labor	\$ 243	\$ 1.36	\$ 259	\$ 1.40
Dairy grain & concentrate	621	3.46	622	3.36
Dairy roughage	50	0.28	47	0.26
Nondairy feed	0	0.00	0	0.00
Machine hire/rent/lease	56	0.31	62	0.34
Mach. repair & vehicle exp.	143	0.80	185	1.00
Fuel, oil & grease	50	0.28	47	0.25
Replacement livestock	33	0.18	49	0.26
Breeding	37	0.21	40	0.21
Veterinary & medicine	58	0.32	69	0.37
Milk marketing	100	0.56	107	0.58
Bedding	11	0.06	17	0.09
Milking supplies	78	0.44	74	0.40
Cattle lease	7	0.04	11	0.06
Custom boarding	4	0.02	6	0.04
bST expense	14	0.08	21	0.12
Other livestock expense	42	0.24	43	0.24
Fertilizer & lime	69	0.39	72	0.39
Seeds & plants	36	0.20	37	0.20
Spray/other crop expense	26	0.15	28	0.15
Land, building, fence repair	59	0.33	77	0.41
Taxes	71	0.39	64	0.34
Real estate rent/lease	49	0.27	53	0.29
Insurance	51	0.28	54	0.29
Utilities	71	0.40	79	0.43
Interest paid	156	0.87	114	0.61
Miscellaneous	34	0.19	45	0.24
Total Operating Expenses	\$ 2,170	\$ 12.10	\$ 2,283	\$ 12.33
Expansion Livestock	1	0.01	20	0.11
Machinery Depreciation	143	0.80	192	1.04
Real Estate Depreciation	68	0.38	81	0.44
Total Expenses	\$ 2,382	\$ 13.28	\$ 2,576	\$ 13.92
Net Farm Income Without Appreciation	\$ 735	\$ 4.10	\$ 519	\$ 2.80

RECEIPTS AND EXPENSES PER COW AND PER CWT.
Same 10 Above Average Intensive Grazing Dairy Farms, 1998 & 1999

Item	1998		1999	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average Number of Cows	50		52	
Cwt. Of Milk Sold		9,028		9,531
<u>ACCRUAL OPERATING RECEIPTS</u>				
Milk	\$ 2,851	\$ 15.79	\$ 2,777	\$ 15.15
Dairy cattle	150	0.83	197	1.08
Dairy calves	27	0.15	32	0.17
Other livestock	-2	-0.01	0	0.00
Crops	25	0.14	-28	-0.15
Miscellaneous receipts	116	0.64	132	0.72
Total Receipts	\$ 3,167	\$ 17.54	\$ 3,110	\$ 16.97
<u>ACCRUAL OPERATING EXPENSES</u>				
Hired labor	\$ 157	\$ 0.87	\$ 160	\$ 0.87
Dairy grain & concentrate	646	3.58	587	3.21
Dairy roughage	82	0.45	103	0.56
Nondairy feed	0	0.00	0	0.00
Machine hire/rent/lease	38	0.21	30	0.17
Mach. repair & vehicle exp.	132	0.73	117	0.64
Fuel, oil & grease	35	0.19	37	0.20
Replacement livestock	32	0.18	32	0.18
Breeding	27	0.15	24	0.13
Veterinary & medicine	42	0.23	47	0.25
Milk marketing	119	0.66	149	0.81
Bedding	8	0.04	21	0.11
Milking supplies	62	0.34	57	0.31
Cattle lease	0	0.00	0	0.00
Custom boarding	0	0.00	0	0.00
bST expense	7	0.04	8	0.04
Other livestock expense	48	0.26	40	0.22
Fertilizer & lime	38	0.21	50	0.27
Seeds & plants	29	0.16	21	0.12
Spray/other crop expense	16	0.09	17	0.09
Land, building, fence repair	56	0.31	63	0.34
Taxes	94	0.52	69	0.37
Real estate rent/lease	7	0.04	59	0.32
Insurance	59	0.32	47	0.26
Utilities	92	0.51	97	0.53
Interest paid	164	0.91	119	0.65
Miscellaneous	59	0.33	37	0.20
Total Operating Expenses	\$ 2,048	\$ 11.35	\$ 1,991	\$ 10.86
Expansion Livestock	8	0.04	0	0.00
Machinery Depreciation	156	0.86	211	1.15
Real Estate Depreciation	64	0.35	37	0.20
Total Expenses	\$ 2,276	\$ 12.61	\$ 2,239	\$ 12.22
Net Farm Income Without Appreciation	\$ 891	\$ 4.93	\$ 871	\$ 4.75

RECEIPTS AND EXPENSES PER COW AND PER CWT.
Same 14 Below Average Intensive Grazing Dairy Farms, 1998 & 1999

Item	1998		1999	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average Number of Cows	100		98	
Cwt. Of Milk Sold		16,845		17,520
<u>ACCRUAL OPERATING RECEIPTS</u>				
Milk	\$ 2,592	\$ 15.39	\$ 2,562	\$ 14.33
Dairy cattle	216	1.28	206	1.15
Dairy calves	20	0.12	12	0.07
Other livestock	38	0.22	43	0.24
Crops	76	0.45	-60	-0.34
Miscellaneous receipts	75	0.44	113	0.63
Total Receipts	\$ 3,016	\$ 17.91	\$ 2,874	\$ 16.08
<u>ACCRUAL OPERATING EXPENSES</u>				
Hired labor	\$ 278	\$ 1.65	\$ 313	\$ 1.75
Dairy grain & concentrate	610	3.62	570	3.19
Dairy roughage	48	0.29	54	0.30
Nondairy feed	0	0.00	0	0.00
Machine hire/rent/lease	49	0.29	47	0.26
Mach. repair & vehicle exp.	130	0.77	215	1.20
Fuel, oil & grease	49	0.29	50	0.28
Replacement livestock	72	0.43	117	0.66
Breeding	30	0.18	29	0.16
Veterinary & medicine	47	0.28	61	0.34
Milk marketing	78	0.46	83	0.47
Bedding	13	0.08	18	0.10
Milking supplies	81	0.48	60	0.34
Cattle lease	12	0.07	14	0.08
Custom boarding	4	0.02	7	0.04
bST expense	18	0.11	24	0.13
Other livestock expense	40	0.24	43	0.24
Fertilizer & lime	87	0.52	86	0.48
Seeds & plants	20	0.12	39	0.22
Spray/other crop expense	19	0.11	22	0.12
Land, building, fence repair	30	0.18	59	0.33
Taxes	60	0.35	56	0.31
Real estate rent/lease	45	0.27	38	0.21
Insurance	34	0.20	39	0.22
Utilities	60	0.36	71	0.40
Interest paid	179	1.06	134	0.75
Miscellaneous	17	0.10	50	0.28
Total Operating Expenses	\$ 2,111	\$ 12.53	\$ 2,299	\$ 12.86
Expansion Livestock	0	0.00	52	0.29
Machinery Depreciation	129	0.77	202	1.13
Real Estate Depreciation	74	0.44	108	0.60
Total Expenses	\$ 2,314	\$ 13.74	\$ 2,662	\$ 14.89
Net Farm Income Without Appreciation	\$ 702	\$ 4.17	\$ 213	\$ 1.19

Grazing 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 the regional summary. Use this information to identify business areas where more challenging goals are needed.

FARM BUSINESS CHART FOR FARM MANAGEMENT COOPERATORS

65 Intensive Grazing Dairy Farms, 1999

Size of Business			Rate of Production			Labor Efficiency	
Worker Equivalent	No. 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)*	(11)	(11)	(10)	(9)	(9)	(11)	(11)
4.61	169	3,250,944	22,253	3.8	21	48	873,244
2.99	78	1,476,193	19,723	2.5	18	33	656,982
2.32	61	1,125,898	17,746	2.0	15	29	514,327
1.87	49	866,015	16,704	1.6	12	23	382,762
1.37	37	519,201	12,619	1.1	9	17	250,818

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)	
\$349	15%	\$306	\$885	\$477	\$3.10	
522	21	435	1,174	676	3.85	
611	23	548	1,305	793	4.44	
717	25	623	1,488	929	4.89	
859	34	780	1,847	1,078	6.25	

Value and Cost of Production			Profitability			
Milk Receipts Per Cow	Oper. Cost Milk Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income w/Apprec.	Net Farm Inc. w/o Apprec.	Labor & Mgt. Inc. Per Oper.	Change in Net Worth w/Apprec.
(10)	(10)	(10)	(3)	(3)	(3)	(6)
\$3,401	\$7.31	\$13.31	\$116,666	\$102,334	\$49,660	\$61,269
2,958	9.22	14.84	57,823	46,671	22,952	26,080
2,664	10.49	15.99	41,401	33,664	11,312	15,974
2,398	11.31	17.63	31,939	25,065	720	7,516
1,840	12.94	23.09	16,424	6,554	-19,314	-22,635

*Page number of the participant's DFBS where the factor is located.

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 desired 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 be Timed with a designated date by which the goal will be achieved.

Goal setting on a dairy farm should be 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

GLOSSARY AND LOCATION OF COMMON TERMS

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 15)

Accrual Receipts - (defined on page 16)

Annual Cash Flow Statement - (defined on page 24)

Appreciation - (defined on page 17)

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.

bST Usage - An estimate of the percentage of herd, on average, that was injected with bovine somatotropin during the year.

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 25)

Cash Paid - (defined on page 14)

Cash Receipts - (defined on page 16)

Change in Accounts Payable - (defined on page 15)

Change in Accounts Receivable - (defined on page 16)

Change in Inventory - (defined on page 16)

Cost of Term Debt - 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, operating debt or advanced government receipts. This information is found on pages 8 & 9 of the data entry form.

Culling Rate - (defined on page 29)

Current Portion - (defined on page 20)

Current Ratio - Measures the extent to which current farm assets, if liquidated, would cover current farm liabilities. Calculated as current farm assets at end year divided by current farm liabilities at end year.

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.

Dairy Cash-Crop (farm) - Operating and managing this farm is the full-time occupation of one or more people, cropland is owned but crop sales exceed 10 percent of accrual milk receipts.

Debt Coverage Ratio – (defined on page 25)

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

Debt to Asset Ratios - (defined on page 22)

Depreciation Expense Ratio – Machinery and building depreciation divided by total accrual receipts.

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 25.

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.

Financial Lease - A long-term non-cancelable 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 by number of hired plus family paid worker equivalents.

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 by accrual milk sales.

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 – Accrual interest expense divided by total accrual receipts.

Labor and Management Income - (defined on page 18)

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 – (defined on page 22)

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

Net Farm Income - (defined on page 17)

Net Farm Income from Operations Ratio – (defined on page 20)

Net Milk Receipts – Accrual milk receipts less milk marketing expense.

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 30)

Operating Expense Ratio – Total accrual expenses less interest and machinery and building depreciation, divided by total accrual receipts.

Operator Resources/cwt. - The total value of labor contributed to the farm from all owner/operators. This measure is calculated by multiplying the number of months of labor provided by all owner/operators by \$1,800 and dividing by the number of cwt. produced during the year.

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 DHIC, registration fees and transfers.

Part-Time Dairy (farm) - Dairy farming is the primary enterprise, cropland is owned but operating and managing this farm is not a full-time occupation for one or more people.

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.

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 30)

Renter - Farm business owner/operator owns no tillable land and commonly rents all other farm real estate.

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 20)

Return on Total Capital - (defined on page 20)

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

Total Costs of Producing Milk - (defined on page 30)

Total Labor Cost/cwt. - The total cost of all labor used on the farm on a per cwt. basis. The value of unpaid labor at \$1,800 per month plus the value of operator(s) labor at \$1,800 per month plus total hired labor expense divided by the number of cwt. produced.

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.

Working Capital – A theoretical measure of the amount of funds available to purchase inputs and inventory items after the sale of current farm assets and payment of all current farm liabilities. Calculated as current farm assets at end year less current farm liabilities at end year.

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OTHER A.R.M.E. EXTENSION BULLETINS

<u>EB No</u>	<u>Title</u>	<u>Fee (if applicable)</u>	<u>Author(s)</u>
2000-10	Contracts and Agreements For Custom Dairy Heifer Growing	(\$3 ea.)	Karszes,J. and Cady, Roger A.
2000-09	Dairy Farm Business Summary, Central Valleys Region, 1999	(\$8 ea.)	LaDue, E.L., W.A. Knoblauch, D. Bowne, Z. Kurdieh, C. Oostveen, A.E. Staehr, C.Z. Radick, J. Karszes and L.D. Putnam
2000-08	Dairy Farm Business Summary, Northern New York Region, 1999	(\$8 ea.)	Knoblauch, W., Putnam, L., Van Loo, Wm.,Murray, P., Deming, A., Nobles, C., Beyer, P.
2000-07	Dairy Farm Business Summary, Southeastern New York Region, 1999	(\$8 ea.)	Knoblauch, W.A., L.D. Putnam, M. Dennis, S.E. Hadcock, L.R. Hulle, M. Kiraly and J.J. Walsh
2000-06	Dairy Farm Business Summary, Western and Central Plateau Region, 1999	(\$8 ea.)	Knoblauch, W.A., L.D. Putnam, C.A. Crispell, J.W. Grace, J.S. Petzen, A.N. Dufresne and G. Albrecht
2000-05	Dairy Farm Business Summary, Northern Hudson Region, 1999	(\$8 ea.)	Conneman, G.J., L.D. Putnam, C.S. Wickswat, S. Buxton and D. Maxwell
2000-04	Dairy Farm Business Summary, New York Large Herd Farms, 300 Cows or Larger, 1999	(\$12 ea.)	Karszes, J., W.A. Knoblauch and L.D. Putnam
2000-03	Dairy Farm Business Summary, Western and Central Plain Region, 1999	(\$8 ea.)	Knoblauch, W.A., L.D. Putnam, J. Karszes, S. Richards, J. Hanchar, C. Oostveen, B. Dehm, G. Allhusen and V. Smith
2000-02	DFBS, A Guide to Processing Dairy Farm Business Summaries in County and Regional Extension Offices for DFBS Version 4.3		Putnam, L.D. and W.A. Knoblauch
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