

# DAIRY FARM BUSINESS SUMMARY

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## INTENSIVE GRAZING FARMS NEW YORK 1997



**George Conneman  
Carl Crispell  
James Grace  
Jason Karszes  
Laura Torbert  
Linda D. Putnam**

Department of Agricultural, Resource, and Managerial Economics  
College of Agriculture and Life Sciences  
Cornell University, Ithaca, New York 14853-7801

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**Intensive Grazing Farms**  
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## 1997 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). Fifty-two 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 52 farms were asked to complete a grazing practices survey. Thirty-seven of the farms did complete it. The investigators chose to eliminate from the study those farms which owned no real estate. Of the 46 remaining farms, surveys were obtained from 35. The investigators had special interest in practices used on farms with above average profitability. Therefore the study centered on 35 farms which were not first year grazers and on which at least 40 percent of forage consumed during the grazing season was grazed. These 35 farms were divided on the basis of net farm income (without appreciation) per cow above and below \$194 which was the average for all farms participating in DFBS. Nineteen farms with net farm income per cow above \$194 are in the "More Profitable" group and sixteen farms with net farm income per cow below \$194 comprise the "Less Profitable" 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 1996 and 1997 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 1997 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 future. Please refer to the table on page 3 for selected factors from 19 farms that used management intensive grazing for both 1996 and 1997 and participated in the DFBS project for both years.

These 19 farms changed very little in size from 1996 to 1997. Herd size increased by two animals to an average of 78, average number of heifers increased by 5.5%, and tillable and nontillable land used by the farms decreased by 2.6%. The number of worker equivalents working the farm increased by 3.7% to 2.5 equivalents.

While herd size increased by 2.6%, milk sold off the farm increased only by 1.1%. This was due to the fact that milk produced per cow fell 1.6% to a level of 17,997 pounds per cow. This may in part be due to the poor growing conditions in 1997 that led to lower quantity and quality of grass. This decrease in yield is also reflected in the hay dry matter yields, which fell 20.6%, and the corn silage yields, which fell 10.6%.

The increase in the number of worker equivalents was larger than the increase in herd size, which led to a decrease in labor efficiency. Cows per worker fell 3.1% to 31 cows. This decrease in cows per worker coupled with the decrease in milk sold per cow led to a 2.5% decrease in the milk sold per worker, to 558,852 pounds per worker.

Total expenses to operate these 19 farms didn't change significantly. Total farm operating costs per cwt. of milk sold fell 4.8%. Operating costs of producing cwt. of milk fell 1.4%, and total costs of producing cwt. of milk fell 1.3%. This reflects a couple different things happening within the farm. While feed expenses did decrease, the decrease in milk produced per cow plus increases in some expenses, such a labor expense, offset most of the feed expense decrease and kept total expenses relatively unchanged.

Gross milk sales per cow fell 11.9%, which is a result of a 10.5% decrease in milk price received and a decrease of 1.6% in milk sold per cow. Dairy cattle sales also decreased by 17.3%.

The large decrease in milk income per cwt. coupled with the smaller decreases in expenses per cwt. of milk produced led to a significant decrease in profitability. Net farm income without appreciation fell 39.3%, to a level of \$29,119. Labor and management income per operator fell 74.6%, to a level of \$5,236. Rate of return on equity capital without appreciation fell 140.5% to -1.56% and rate of return on all capital without appreciation fell 74.9% to 1.29%.

Even though these farms did not exhibit high levels of profitability in 1997, they still increased net worth by 2.5%, to \$353,802, and debt per cow fell 4.4% to \$1,965. This was due to the fact that while high profits were not generated, these farms were able to manage cash flow and make it through the year without borrowing additional funds.

**PROGRESS OF THE FARM BUSINESS**  
Same 19 Grazing Dairy Farms, 1996 & 1997

Selected Factors	Average of 19 Farms		Percent Change
	1996	1997	
<u>Size of Business</u>			
Average number of cows	76	78	2.6%
Average number of heifers	55	58	5.5%
Milk sold, lbs.	1,382,061	1,397,131	1.1%
Worker equivalent	2.41	2.50	3.7%
Total nontillable pasture & tillable acres	271	264	-2.6%
<u>Rates of Production</u>			
Milk sold per cow, lbs.	18,286	17,997	-1.6%
Hay DM per acre, tons	2.81	2.23	-20.6%
Corn silage per acre, tons	15.04	13.44	-10.6%
<u>Labor Efficiency &amp; Costs</u>			
Cows per worker	32	31	-3.1%
Milk sold/worker, lbs.	573,469	558,852	-2.5%
Hired labor cost/cwt.	\$1.19	\$1.34	12.6%
Hired labor cost/worker	\$22,102	\$22,300	0.9%
Hired labor cost as % of milk sales	8.0%	10.2%	27.5%
<u>Cost Control</u>			
Grain & conc. purchased as % of milk sales	29%	27%	-6.9%
Grain & conc. per cwt. milk	\$4.30	\$3.60	-16.3%
Dairy feed & crop expense per cwt. milk	\$5.33	\$4.77	-10.5%
Labor & mach. costs/cow	\$1,017	\$1,065	4.7%
Total farm operating costs per cwt. sold	\$12.40	\$11.81	-4.8%
Interest costs per cwt. milk	\$0.89	\$0.86	-3.4%
Milk marketing costs per cwt. milk sold	\$0.56	\$0.46	-17.9%
Operating cost of producing cwt. of milk	\$10.29	\$10.15	-1.4%
Total costs of producing cwt. of milk	\$15.01	\$14.82	-1.3%
<u>Capital Efficiency</u> (average for the year)			
Farm capital per cow	\$6,406	\$6,458	0.8%
Mach. & equip. per cow	\$1,011	\$1,038	2.7%
Asset turnover ratio	0.49	0.43	-12.2%
<u>Income Generation</u>			
Gross milk sales per cow	\$2,681	\$2,362	-11.9%
Gross milk sales per cwt.	\$14.74	\$13.19	-10.5%
Net milk sales per cwt.	\$14.18	\$12.73	-10.2%
Dairy cattle sales per cow	\$214	\$177	-17.3%
Dairy calf sales per cow	\$21	\$21	0.0%
<u>Profitability</u>			
Net farm income w/o apprec.	\$47,978	\$29,119	-39.3%
Net farm income w/apprec.	\$53,856	\$34,130	-36.6%
Labor & mgt. income per oper./manager	\$20,578	\$5,236	-74.6%
Rate of return on equity capital w/o apprec.	3.85%	-1.56%	-140.5%
Rate of return on all capital w/o apprec.	5.13%	1.29%	-74.9%
<u>Financial Summary</u>			
Farm net worth, end year	\$345,195	\$353,802	2.5%
Debt to asset ratio	0.31	0.30	-3.2%
Farm debt per cow	\$2,055	\$1,965	-4.4%

## INTENSIVE GRAZING SURVEY SUMMARY

From the survey data of the 35 selected grazing farms, analysis of average production levels and profitability measures are shown as follows:

### SELECTED PRODUCTION AND PROFITABILITY MEASURES Intensive Grazing Dairy Farms, 1997

	19 More Profitable Dairy Farms	16 Less Profitable Dairy Farms
Pounds milk sold per cow	18,288	16,155
Net farm income/cow without appreciation	\$452	\$-164
Operating cost of producing milk per cwt.	\$10.12	\$13.11

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

### GRAZING PRACTICES Intensive Grazing Dairy Farms, 1997

	19 More Profitable Dairy Farms	16 Less Profitable Dairy Farms
Average number of cows	89	76
Average % protein of concentrate during grazing season	13	12
Average cost for concentrate/cow/day	\$1.17	\$1.15
Percent farms that fed grain in a total mixed ration	41	36
Average percent forage from pasture	66	75
Percent farms providing new pasture after each milking or more	53	38
Percent farms providing new pasture 1x/day	26	50
Percent farms providing new pasture every other day or less	21	12
Percent farms which provided shade in paddocks	32	44
Average times equivalent pastures were clipped	1.5	1.2
Average length of grazing season (days)	181	158
Percent farms which applied fertilizer to pasture	42	50
Avg amount of fertilizer used (lbs./acre) on those farms	168	121
Percent farms which reported weeds to be a problem	26	69
Percent farms with water available in every paddock	63	56
Percent farms with water available in laneway	26	19
Percent farms with no water provided outside of barn	11	25
Closest avg distance cows had to walk for water (ft)*	228	243
Farthest avg distance cows had to walk for water (ft)*	1,160	1,029
Percent farms reseeded pasture during last 10 yrs.	58	50
Percent acreage reseeded on those farms	51	56
Percent farms where pasture was also mechanically harvested	89	81
Percent pasture mechanically harvested on those farms	46	39
Most common pasture species	orchard grass	orchard grass
Second	blue grass	native grass mix, native clover
Third	native clover	ladino clover
Percent of farms with a spring seasonal herd	18	14

\* This excludes those farms who provided water in every paddock

Providing water in every paddock, rotating to a new paddock after each milking, and supplementing with corn silage and grain seemed to be practices that led to higher production per cow and greater profitability within the "more profitable" group. Some of the "less profitable" farms used these same practices. The tables below compare the more profitable group to the less profitable group and tend to confirm that those practices lead to higher profitability (or less loss). Successful managers of grazing farms need all of the skills for managing the herd in the barn during 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. The data from the high profitability group in the table below shows the importance of water availability, in terms of maximizing milk production and net farm income or minimizing operating costs, especially purchased grain and concentrates.

#### WATER AVAILABILITY Intensive Grazing Farms, 1997

	19 More Profitable Dairy Farms		16 Less Profitable Dairy Farms	
	Water in Every Paddock?		Water in Every Paddock?	
	Yes (12)*	No (6)	Yes (9)	No (7)
Pounds milk sold per cow	19,301	17,098	16,087	13,856
Net farm income per cow without appreciation	\$527	\$446	\$120	\$-169
Purchased grain cost per cwt.	\$3.65	\$3.97	\$4.59	\$3.91
Operating cost of producing milk per cwt.	\$10.06	\$9.88	\$12.65	\$12.81

\*Number of responses to survey question.

### Supplemental Feeding

The table at the bottom of page 4 shows that the more profitable operations have a much lower percent of their forage coming from pasture than the less profitable operations. This demonstrates the importance of sufficient, high quality supplemental forage. The table below compares milk production and net farm income on farms feeding corn silage and other forages. 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, 1997

	19 More Profitable Dairy Farms		16 Less Profitable Dairy Farms	
	Fed Any Corn Silage* (5)**	Fed Non-Corn Silage (3)	Fed Any Corn Silage (5)	Fed Non-Corn Silage (6)
	Percent forage from pasture	55%	78%	76%
Pounds milk sold per cow	20,087	14,871	17,713	12,744
Net farm income per cow without appreciation	\$447	\$318	\$-280	\$-167
Pounds grain fed per cow per day	16	13	16	13

\*Any Corn Silage is either corn silage alone or a mixed with any other forage.

\*\*Number of responses to survey question.

### Ration Details, More Profitable Farms

Of the 19 more profitable farms in the summary, eight reported their ration details. The average pounds of total concentrate fed was 15.25 lbs./cow/day. Four farms reported corn meal as the primary grain in their concentrate mix with an average of 10.75 lbs./cow/day. The other four farms reported commercial grain mixes as their primary grain with an average of 15.5 lbs./cow/day. The protein level in these mixes averaged 16%. The only other grain reported in use on these farms was soybean meal.

Of the eight farms that reported ration details, five used corn silage as an additional forage. The average was 29 lbs./cow/day. One farm reported using baleage, and three reported using other forage in addition to pasture and corn silage. The most common "other forage" was dry hay.

### Ration Details, Less Profitable Farms

Of the 16 less profitable farms in the summary, 11 reported their ration details. The average pounds of total concentrate fed was 14 lbs./cow/day. Five farms reported commercial grain mixes as the primary grain in their concentrate mix with an average of 13.2 lbs./cow/day. The protein level in these mixes averaged 14.75%. Four farms reported corn

meal as the primary grain in their concentrate mix with an average of 11.25 lbs./cow/day. The other grains in use reported on these farms included soybean meal, cotton seed, distillers, and corn barley.

Of the 11 farms that reported ration details, five used corn silage as an additional forage. The average was 21 lbs./cow/day. One farm reported using baleage, and six reported using other sources of forage in addition to pasture and corn silage. The most common "other forage" was dry hay.

### Frequency of Rotation

In the more profitable group of graziers, nine farmers rotated cows into a fresh paddock after each milking and five farmers provided new pasture once per day. The table below compares the rotation of cows on new pasture after each milking to high milk production and net farm income.

**ROTATION FREQUENCY**  
**Intensive Grazing Farms, 1997**

	19 More Profitable Dairy Farms		16 Less Profitable Dairy Farms	
	Rotation		Rotation	
	After Each Milking (9)	Once a Day (5)	After Each Milking (6)	Once a Day (5)
Pounds milk sold per cow	19,282	18,429	16,907	14,910
Net farm income per cow w/o appreciation	\$550	\$438	\$-170	\$-102

### Intensive Grazing Satisfaction Comments

- "MIG (Management Intensive Grazing) offers different things to different people. It helps us find the time to be."
- "We like cows out of the barn. Milk is lower in SCC (somatic cell count). Less or no mastitis. Lower cull rate. Herd numbers are increasing."
- "Reduced input costs-purchased feed, fuel, leading to increased profits. Milk production held steady at 19,000+ per cow."
- "Last year was very dry and pastures were very short. "After-feed" was ¼ of the year before. In 1996, we never supplemented May-October. However, in 1997 we fed baleage outside and dry hay inside the whole grazing season."
- "More rotational than intensive especially in 1997."
- "Would never go back to full barn feeding."
- "Cows are healthier. Foot trimming is important. Way to make cheap milk. It works whether feeding in barn or out."
- "Satisfaction has increased with years of experience. Satisfaction somewhat dependent on weather conditions."
- "We have always grazed, but not rotationally prior to 1992."
- "Have trouble holding production on pasture."
- "There is no other way to operate this farm."
- "I wouldn't farm if I didn't graze."

### Lifestyle Satisfaction Comments

- "It's a blessing to find an occupation that affords people who love each other the opportunity to work together every day raising their children, tending their livestock, and building their community."
- "I am happy doing what I do. It is always interesting."
- "Low profits are very discouraging."
- "We love farming on a 'small' scale. Like being our own bosses and managing cows instead of people. We hope grazing gives us the advantage needed so we can stay in this business called dairy farming."
- "I've always enjoyed my job and lifestyle, but I am concerned about maintaining this lifestyle with economic conditions these last few years."
- "Long hours, seven days a week."
- "Not enough money to do things the way they should be done. Not enough time for family."
- "Time spent working is too high."
- "When you are 100% satisfied with anything you tend not to look for ways to improve and tend not to set forward thinking goals."
- "I'm short of income to meet the outgo."
- "Dynamite life except for one thing, too isolated."
- "Less stressful at times. I enjoy being outside with grass and cows."

**INTENSIVE GRAZING FARMS VS. NON-GRAZING FARMS**  
**New York State Dairy Farms, 1997**

Item	All Intensive Grazing Farms	Non-Grazing Farms*	Profitable Grazing Farms**	Profitable Non- Grazing Farms***
Number of farms	46	48	19	61
<b><u>Business Size &amp; Production</u></b>				
Number of cows	82	83	89	87
Number of heifers	57	58	66	67
Milk sold, lbs.	1,422,734	1,453,758	1,626,657	1,603,331
Milk sold/cow, lbs.	17,277	17,463	18,288	18,422
Milk plant test, % butterfat	3.68%	3.71%	3.72%	3.73%
Tillable acres, total	234	266	244	282
Hay crop, tons DM/acre	2.2	2.1	2.4	2.2
Corn silage, tons/acre	14.1	15.1	14.1	15.5
Forage DM/cow, tons	5.9	8.1	5.4	8.3
<b><u>Labor &amp; Capital Efficiency</u></b>				
Worker equivalent	2.79	2.78	2.87	2.98
Milk sold/worker, lbs.	509,941	522,935	566,779	538,031
Cows/worker	29	30	31	29
Farm capital/worker	\$188,646	\$209,802	\$197,629	\$213,136
Farm capital/cow	\$6,419	\$7,027	\$6,373	\$7,301
Farm capital/cwt. milk	\$37	\$40	\$35	\$40
<b><u>Milk Production Costs &amp; Returns</u></b>				
Selected costs/cwt.:				
Hired labor	\$1.48	\$1.05	\$1.52	\$1.27
Grain & concentrate	\$4.00	\$4.55	\$3.69	\$4.13
Purchased roughage	\$0.22	\$0.25	\$0.21	\$0.19
Replacements purchased	\$0.16	\$0.29	\$0.09	\$0.23
Vet & medicine	\$0.32	\$0.37	\$0.32	\$0.35
Milk marketing	\$0.57	\$0.67	\$0.55	\$0.66
Other dairy expenses	\$0.94	\$1.05	\$0.94	\$1.06
Operating cost/cwt.	\$11.08	\$11.90	\$10.12	\$10.67
Total labor cost/cwt.	\$3.75	\$3.55	\$3.50	\$3.39
Operator resources/cwt.	\$3.23	\$3.34	\$3.08	\$3.13
Total cost/cwt.	\$15.74	\$17.08	\$14.52	\$15.36
Average farm price/cwt.	\$13.47	\$13.80	\$13.53	\$13.87
Return over total costs/cwt.	-\$2.27	-\$3.28	-\$0.99	-\$1.49
<b><u>Related Cost Factors</u></b>				
Hired labor/cow	\$256	\$184	\$278	\$234
Total labor/cow	\$651	\$623	\$639	\$624
Purchased dairy feed/cow	\$731	\$839	\$711	\$796
Purchased grain & concentrate as % of milk receipts	30%	33%	27%	30%
Vet & medicine/cow	\$55	\$65	\$58	\$65
Machinery costs/cow	\$421	\$490	\$411	\$460
Feed & crop exp./cwt.	\$4.97	\$5.64	\$4.69	\$5.28
<b><u>Profitability Analysis</u></b>				
Net farm income (without appreciation)	\$19,705	\$9,502	\$40,258	\$33,527
Net farm income per cow (w/o apprec.)	\$240	\$114	\$452	\$385
Labor & management income/operator	-\$2,348	-\$12,589	\$11,435	\$2,457
Rates of return on:				
Equity capital with appreciation	-2.5%	-5.8%	1.7%	1.2%
All capital with appreciation	1.0%	-1.3%	3.4%	2.7%

\*Farms with similar herd size, production per cow, and location as the 46 rotational grazing farms.

\*\*Farms with net farm income/cow without appreciation greater than the state average of \$194, had been grazing at least two years, and forage from pasture at least 40 percent.

\*\*\*Farms with similar herd size and production per cow as the 19 profitable grazing farms and net farm income/cow without appreciation greater than \$194.

## CASE STUDIES

Twin Oaks Farm

Twin Oaks Farm, located in Cortland County, is owned and operated by partners Bob, Rick, and Kathie Arnold. They began management intensive grazing (MIG) in 1993 after studying their 1992 Dairy Farm Business Summary (DFBS) and finding feed costs too high and profitability too low. The transition was difficult and stressful for the Arnolds. In April 1993 the herd was milking the best they ever had at over 80# per day. It was difficult for them to watch the bulk tank stick read a little lower each day. They calculated and recalculated milk income over feed costs every few days and kept grazing because even with somewhat less milk they were still ahead because feed costs were so much lower.

The 1993 Business Summary showed about the same net income per operator and return to capital as 1992 even though the average milk price was 40 cents lower and they were going through that steep uphill learning curve that first year of MIG. The results convinced them that they were heading the right direction. DFBS reports since then have absolutely convinced the Arnolds that MIG is the right way for them to achieve their goal of high net profit per cow through high production per cow coupled with low costs. In 1997, their net farm income per cow without appreciation was \$1,514.

How do they do it?

Water is supplied to the cows wherever they are. It is supplied from two wells, one near each end of the area with the most frequently used paddocks. A pond at the top of the hill gravity feeds water tubs on the hillside paddocks. To prevent spilling of tubs by the cows, tubs are placed under the hot wire and Jobe Megaflo valves are used for fast recovery.

Arnolds endeavor to maximize dry matter intake from quality pasture. Cows go to a fresh paddock after each milking and are offered enough so that they do not clean it up. Heifers and dry cows follow the milking cows in the paddock rotation and clean up the less desirable grass. Experience with making milking cows clean up paddocks resulted in loss of production. A total mixed ration (TMR) is fed in the barn, during a two hour milking period, adjusted to the amount cows will eat during that time. Over the 200 day grazing period, Arnolds have replaced 35 to 45% of the normal TMR fed in winter, so the pasture replaces both forage and grain. TMR compliments grazing very well, because it easily allows flexibility to meet needs. If a cow must be left in the barn to be bred, she is already used to the TMR.

Cow comfort receives a lot of attention at Twin Oaks. On very hot and humid days cows are put in the barn equipped with tunnel ventilation. Another technique is to save the paddocks with shade trees for those uncomfortable days. The cows will leave the shade to graze for awhile and return to the shade periodically throughout the day.

Changes in 1998

In January 1998, Arnolds began another big transition where they began producing milk organically. Actually the transition began during the 1997 crop season when they produced and harvested some of the crops organically and kept conventional crops separated to feed until beginning organic transition with the milking cows and to feed young heifers or to sell. The purchase of 150 acres of river valley land about a mile from the home farm a few years ago had put Twin Oaks in a surplus land situation even with an increase from 75 to 95 cows. Arnolds had not found growing corn for grain conventionally to be very profitable, but felt with organic grain priced about double that of conventional, growing crops organically would be advantageous. Also, they had not used chemicals or commercial fertilizer on half of their cropland, so it could be certified organic right away. They already had a manure storage and had made very limited use of antibiotics and chemicals. After a 90 day transition period, Twin Oaks began selling organic milk on May 1.

During May and early June they completely removed the protein supplement from the TMR. They also limited the amount of TMR fed in the barn so that the mangers were clean for a while before cows went back to pasture. These changes did not decrease milk production noticeably. When pasture quality decreased a bit, the protein level of the TMR was increased and more of the TMR was offered. Arnolds have used wheat middlings (mids) in the TMR during the summer when it was priced reasonable and are using organic mids in the summer of 1998. On May 1 NOFA-NY, their certifying organization, changed its requirements so that milk could not be considered organic

until 30 days after use of an antibiotic. Twin Oaks has used no antibiotics since then. The requirement changes to 90 days withholding time in 1999. The increased cow health provided by grazing has been a big benefit and is doubly important now that being organic severely limits health care options.

To date Arnolds have found the transition to organic production challenging but not overwhelming. Their concern for the future is whether the price differential will continue to stay high enough for profitable organic production. Currently, their price is the higher of \$19.00 per hundredweight or \$5.00/cwt. over the Order 2 blend price. They are growing 50 acres of corn grain organically in 1998 and have found reliable sources to purchase the additional amount needed. The 1998 grazing season started early with cows out both days and nights by April 21 and getting 50% of all their feed from pasture by May 1.

The Arnolds continue to update, refine, and change their grazing and whole farm system as needed to deal with ever changing conditions. Key to that is to stay flexible, open minded, and willing to make changes and adaptations.

### East Hill Farms

Gary and Betty Burley started grazing in 1986 with 40 cows. While the grazing was extremely successful, Gary felt that to enjoy time with his family and stay competitive in the dairy business, he would have to expand. In 1991, a flat barn parlor was built in the old tie stall, a 200 cow freestall barn was built, and a switch was made over to a confinement feeding system. While the rotational grazing allowed the business to get into a position to expand, Gary was not sure he had enough pasture, did not know if it was manageable, and was interested in trying a high production system to obtain profits.

From 1991 to 1994 the farm grew to 250 cows in the confinement system. While the farm was successful and making progress, due to the intensity of management and labor requirements and the fact that Gary missed rotational grazing, he and Betty decided to start switching back to a grazing system in 1994 with the replacements. He felt that rotational grazing and seasonal milk production would fit his preferred management style and allow the farm to at least equal, if not surpass, the profitability of the confinement system. In 1995 the cows were back into a grazing system, supplemented by a TMR out of the feed storage system. For 1996 more land was converted to pasture and less supplementing was done with a TMR.

In 1997, 277 milking and dry cows along with 212 dairy replacements were grazed on 300 acres of pasture. Corn on 141 acres and hay on 214 acres were raised for winter feed. The grazing season started on May 10<sup>th</sup>. For 1997, a one-group system was utilized, from a two-group system in 1996, with the paddocks being resized to accommodate the large number of animals. Paddock size was 5-6 acres with electric fence. Cows entered a new paddock after each milking, with milking occurring at 4:00 a.m. and 2:30 p.m. Two Kawasaki Mules are used to move animals around. Gary switched from four wheelers to the mules for carrying capacity of supplies and reliability.

From watching this system in 1997, Gary felt that the cows would utilize more pasture at night than during the day, so a switch was planned for 1998. Lanes and perimeter electric fence would be installed but no fence would be installed for the individual paddocks. Each day, break wires would be used to separate out paddocks and this would allow the flexibility to change paddock size, by night versus day and by how well the grass was growing. This would also allow easier and more timely field activities, such as fertilizer spreading, rolling, and reseeding, because large field size was maintained.

All paddocks have water piped to them, with an estimated five miles of one inch 160psi black plastic water pipe laid above and below ground around the farm. Four portable water troughs are moved to the needed paddocks with the Kawasaki Mules.

The cows are milked in a double 14, 28 unit, low cost, no frills parlor built where the flat barn parlor was in the old tie stall barn. Twelve pounds of grain per cow per day is fed to the cows during milking and this is the only supplementation that lactating animals receive. For 1997 a hominy and mineral blend was used. Due to the fluctuation in daily milk production, Gary is planning to change to a corn meal and mineral mix for 1998. He thinks this will be a more consistent feed and will cut back the fluctuations.

The heifers were grazed on a separate paddock system and there was no lead follow over to the cow side. Due to the high stocking rate and growing conditions in 1997, there was not enough pasture to maintain the heifers

for the season. Older heifers were kept on sacrifice paddocks and fed round bale hay, while younger heifers stayed on a rotational system. In early fall the older heifers were let back out onto lush pasture and Gary felt that compensatory grain made up for the poor feed quality of the round bales and while not ideal, this approach didn't adversely affect the growth rates of the heifers.

The grazing season for the cows ended on October 6<sup>th</sup>. For 1998, Gary plans to increase pasture to 400 acres for the same number of animals, so that all animals can stay on grass for the season.

A unique facet of the farm is that 130 acres of pasture in 1997 was located across a state highway from the farm. During the grazing season, for an average of five days a week, the milking herd of 270 cows crossed the road, at 4:00 a.m. and at 2:00 p.m. In the afternoon the cows are bunched at the gate, then the traffic is stopped and one polywire is strung across the road and the cows cross. One person controls the gate at the road while a second person comes up behind the cows. Crossing times averaged less than two minutes and traffic was stopped for less than five minutes. Gary didn't feel that enough mud was tracked onto the road to justify taking the time to clean the road while the traffic was stopped. Gary and Betty feel that 95 percent of the drivers don't mind waiting for the cows to cross, while 5 percent voice their displeasure in various ways. For the morning crossing two polywires are strung across the road and the cows cross at their leisure. When a vehicle approaches the polywire is let down, then strung back across once the vehicle passes. For 1998, a flashing yellow warning light will be installed on a pickup or mule to be used at the road crossing.

For 1997, the pasture fertilizer program consisted of applying 150 pounds of actual N when Gary felt a paddock needed it. While this spread the application program throughout the summer, Gary plans to change the approach in 1998. With the high stocking rates and variable weather conditions, the time lag between application and response was critical and he felt that grass yield and quality was lost. For 1998 Gary plans to spread ammonium nitrate on all pastures three times a year, spring green up, June 1<sup>st</sup> and the third week of July. He is also going to try an airflow applicator to even out the application.

Calving season for 1997 started the last week of February and calves were started until the middle of July. Any calves born after that date were sold. For 1997, 85 heifers and 65 bulls were started. The Burley's use a mob feeding system for calves. Calves start in an old barn in small pens to learn how to use the mob feeder and get on their feet. Once 15 calves are up and running on the mob feeder they are moved to a second barn. Two pounds of calf starter per calf are provided free choice. After May 15<sup>th</sup> the new groups of 15 that are started are moved to small pastures. The groups in the barns are moved to pasture once they are weaned. The calves are weaned at 5-6 weeks from whole milk. No milk replacer was used in 1997.

The bull calves that are started are raised to 770 lbs. and sold to Michigan as stockers in semi trailer lots. Gary raises the steer to help manage the spring flush of grass on the paddocks.

For winter, all lactating cows are housed in the freestall barn, while heifers and dry cows are held on sacrifice areas within the pastures. Pastures behind wood lots and hills are used to cut down on wind. All groups are fed a TMR of corn silage and grass haylage. The ration is only balanced for minerals and energy from the forage, with no supplementation for protein. Gary feels the key to making this system work is forage quality. The TMR is fed to the animals in the pasture under a break wire. The wire is moved daily to minimize mud build up in the pastures. Pastures used during the winter are renovated in the spring. By using these pastures in the winter, nutrient values are brought up and the sod is broken down.

For 1997, the breeding system consisted of breeding 200 cows to AI while using a synchronization program to shorten up the calving window in the spring. While Gary felt it was a good idea, only a 35% first conception rate was achieved and bulls had to be used to finish the job. With this delayed breeding, Gary's goals for the calving window would not be met in 1998. For 1998 Gary plans on using only bulls, starting around the 18<sup>th</sup> of May. Gary is going in this direction because he feels that it is more important to have cows bred than it is to have them AI.

The herd health program in 1998 consisted of a full, conventional vaccination program for cows and young stock, including magnets as a calf. During the majority of the year the vet is only at the farm as needed or for calf hood vaccinations. The first herd check was performed during the third week of July, and then every 42 days after that until enough animals were checked pregnant. A squeeze chute fed by the return alley or holding area for the parlor is used for all herd work. Worming is done on fecal samples and in 1997 only young calves were wormed.

The labor force for 1997 consisted of Gary and Betty Burley, who both work full-time on the farm. Another full-time employee milked and fed cows for the year. Three part-time people milked during the summer and averaged 25 hours a week. Two additional employees worked from April to November and performed the majority of the field work. They averaged 50 hours a week. This labor force equaled 5.4 full-time worker equivalents and the labor efficiency was 51 cows per worker.

A major change Gary is planning is to move towards a seasonal herd, with less or no lactating cows in the winter. With this approach and increased involvement of their children, Gary and Betty feel that they can eliminate the part-time milkers and the one full-time employee with just one part-time person during the fall and winter.

Gary and Betty have enjoyed the lifestyle of grass farming and using rotational grazing to produce milk. While they enjoy the lifestyle, they also know that it is important to run the farm as a business. Toward that end, they regularly consult with their bankers, consultants, and other grazers on where they feel the business is going and for any input they may have. They also believe that the DFBS has been a useful tool to track their business performance over time and look forward to completing the project each January to see how they are doing in meeting their goals. To help run the farm as a business, they have also developed a mission statement. They look forward to 1998 and beyond as exciting times in the grazing business.

### Lew-Lin Farm

Lewis and Linda Stuttle of Dryden adopted the practice of intensive grazing in 1994 because they wanted to decrease their input and feed costs. They first learned about rotational grazing from magazine articles, and that inspired them to look into other resources. For assistance in planning the fencing set up they went to their local Soil & Water Conservation District office.

After they looked at the economics of intensive grazing, it seemed to fit their operation and it also seemed like it would accomplish the task of lower input expense. And indeed it has. In 1995, their net farm income per cow without appreciation was \$382, \$637 in 1996, and \$380 in 1997. This is still well over the average net farm income for all DFBS farms in 1997, which was \$194. The changes in net farm income were most likely affected by the increase in production. In 1996, their milk sold per cow was 18,201 lbs., followed by 20,381 lbs. per cow in 1997. Along with these increases, the latest report that the Stuttle's received showed a booming 22,097 lbs. per cow as of August of 1998. While talking about this Lewis said, "This is the highest our herd average has been in 10 years."

Since the Stuttle's have always grazed their cattle outside, there weren't too many drastic changes to be made. They did have assistance in making the paddocks, designing laneways, and designing the water system. Each paddock has a water tub, which is filled by 3/4" pipe running from their well. Recently, they have decided that it takes too long to get an ample water supply to the cows, so they are looking into replacing the 3/4" line with one double its size, 1 1/2". With this increased size, they should be able to have the same water supply for the cows in half the amount of time. The closest the cows have to walk to a paddock is about 100 feet and the farthest is approximately 3/4 of a mile.

Since they started the practice of intensive grazing, Lewis says that the fuel, seeding, and feed bills have decreased. He says that because they are feeding half the amount of the ration that used to be fed, they buy less feed, and run less equipment to do so. This is probably in part because during the grazing season the cows get 66% of their forage from grazing. In 1997, their grain & concentrate purchases as a percent of milk sales were 34% and the feed and crop expenses per hundredweight of milk were \$5.50.

Lewis says that the feed bill looks the same, but what needs to be mentioned is that they have greatly increased in cow numbers, and all of this growth has been internal. Average cow numbers were 160, 178, and 180 for 1995-97 respectively, and they are currently milking 190 cows. Therefore, although their amount of fieldwork has increased a bit in the last few years, it actually works out to be less work per cow. He also says that their machinery cost per cow (\$848 in 1996, \$851 in 1997) is high because it seems that they are always fixing up older machinery rather than buying a new piece of equipment.

It takes approximately three hours to milk the 190 cows at Lew-Lin Farm. They milk at 3:00 a.m. and 3:00 p.m. Lewis says he likes to measure the parlor's efficiency based on pounds produced per hour rather than cows per hour. Currently, the herdsman can milk in a fashion that puts out about 2,000 lbs. per hour. While the cows are be-

ing milked, they are observed for heats. They are also observed while on pasture. Someone usually takes the six wheeler to the paddock where the cows are grazing around 8 or 9:00 p.m. to check for heats, as well as any other activity.

When they started intensive grazing they had approximately 110 acres for pasture and now are up to 130 acres. The first year they reseeded approximately 50 acres with an orchardgrass and ladino clover mix at the beginning of April. After the seeding was done they assumed that they would not be able to use those paddocks the first year. To their surprise, they were able to graze the milk cows on that acreage by that July. In addition to seeding orchardgrass and ladino clover they have also seeded with just clover, and even tried rye grass.

In years past they have tried to fertilize pastures when needed. They have used various fertilizers such as lime and urea. This year they put urea on the pastures just before it rained, and had some of the pastures get more ahead of them than would be optimum. As a solution, they harvested some of the paddocks with their first cutting haylage.

Lew-Lin Farm also grows other forages and feed for use on their farm. They have 120 acres of alfalfa/orchardgrass, 120 acres of a grass mix, and 170 acres of corn, 100 of which goes to corn silage, and the remaining 70 acres goes into high-moisture shelled corn.

The Stuttle's had some unique challenges when they started intensive grazing, just as everyone seems to have difficulties specific to their farm. One specific problem at this farm was the laneways that led to the paddocks. The first year they got very wet, muddy, and sloppy. In response to this Lewis contacted the Soil & Water Conservation District office once again, and results happened fast. They came in with a bulldozer and removed all of the mud and wetness in the laneways and replaced it by putting a fabric liner down in the soil, putting gravel on top, and then finishing the top layer with limestone dust.

Because of their superb management, Lew-Lin Farm is a very successful grazing farm. Along with becoming more efficient with feed costs and input costs, the health of the cows has also improved allowing the business to grow and become more productive.

### SUMMARY OF GRAZING FARMS WITH OVER 100 COWS

There were ten farms with more than 100 cows that indicated on the 1997 Dairy Farm Business Summary that they were grazers. Surveys were collected from six of these ten large grazing farms. The table on the following page compares these six grazing farms with 62 non-grazing farms of similar size and location.

#### Grazing Practices Information Collected From the Surveys Follows:

- These farms received an average of 72 percent of the forage in the ration from grazing.
- The average length of the grazing season was 167 days.
- Four out of the six farms fed grain as a total mixed ration.
- One of the larger farms was a seasonal herd.
- Four out of the six farms provided water in every paddock. The remaining two had water available in the laneway.
- Four out of the six farms provided new pasture after each milking, while two farms provided new pasture once per day.
- Three out of the six farms supplemented pasture forage with corn silage. Along with the corn silage two provided some "other" type of forage. One farm indicated only feeding an "other" type of forage.
- None of these farms indicated to have fed baleage.
- Five out of the six farms reseeded an average of 61 percent of pasture acreage in the past 10 years.
- Four out of the six farms mechanically harvested an average of 24 percent of pasture which was also grazed.
- The most common pasture species were (1) ladino clover, (2) orchard grass, and (3) native clover.
- Three out of the six farms applied an average of 203 lbs. of fertilizer per acre.

**INTENSIVE GRAZING FARMS WITH MORE THAN 100 COWS  
VS. NON-GRAZING FARMS OF SIMILAR SIZE, 1997**

Item	Grazing Farms >100 Cows	Non-Grazing Farms
Number of farms	6	62
<u>Business Size &amp; Production</u>		
Number of cows	198	193
Number of heifers	151	129
Milk sold, lbs.	3,435,649	3,946,879
Milk sold/cow, lbs.	17,323	20,440
Milk plant test, % butterfat	3.70%	3.70%
Tillable acres, total	554	475
Hay crop, tons DM/acre	2.5	2.5
Corn silage, tons/acre	14.6	16.0
Forage DM/cow, tons	5.7	7.1
<u>Labor &amp; Capital Efficiency</u>		
Worker equivalent	5.35	5.22
Milk sold/worker, lbs.	642,177	756,107
Cows/worker	37	37
Farm capital/worker	\$246,885	\$229,338
Farm capital/cow	\$6,671	\$6,203
Farm capital/cwt. milk	\$38	\$30
<u>Milk Production Costs &amp; Returns</u>		
Selected costs/cwt.:		
Hired labor	\$2.23	\$1.76
Grain & concentrate	3.80	4.59
Purchased roughage	0.09	0.26
Replacements purchased	0.11	0.34
Vet & medicine	0.33	0.39
Milk marketing	0.51	0.57
Other dairy expenses	0.97	1.10
Operating cost/cwt.	12.01	12.29
Operator resources/cwt.	2.26	1.87
Total labor cost/cwt.	3.17	2.80
Total cost/cwt.	15.31	15.32
Average farm price/cwt.	13.57	13.67
Return over total costs/cwt.	-1.74	-1.65
<u>Related Cost Factors</u>		
Hired labor/cow	\$388	\$360
Total labor/cow	550	573
Purchased dairy feed/cow	675	993
Purchased grain & concentrate as % of milk receipts	28%	34%
Vet & medicine/cow	\$57	\$81
Machinery costs/cow	\$425	\$452
Feed & crop exp./cwt.	\$4.94	\$5.64
<u>Profitability Analysis</u>		
Net farm income (without appreciation)	\$21,746	\$14,436
Net farm income/cow (without appreciation)	\$110	\$75
Labor & management income/operator	\$-17,013	\$-13,392
Rates of return on:		
Equity capital with appreciation	0.5%	-3.0%
All capital with appreciation	2.8%	1.9%

## 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**  
46 Intensive Grazing Dairy Farms, 1997

Type of Farm	Number	Milking System	Number
Dairy	46	Bucket & carry	0
Part-time dairy	0	Dumping station	2
Dairy cash-crop	0	Pipeline	32
		Herringbone parlor	6
		Other parlor	6
Type of Ownership	Number	Production Records	Number
Owner	46	DHIC	22
Renter	0	Owner-Sampler	9
		Other	7
Type of Business	Number	None	8
Sole Proprietorship	38	bST Usage	Number
Partnership	7	Used on <25% of herd	5
Corporation	1	Used on 25-75% of herd	7
Type of Barn	Number	Used on >75% of herd	0
Stanchion or Tie-Stall	32	Stopped using in 1996	4
Freestall	11	Not used in 1996	30
Combination	3	Business Record System	Number
Milking Frequency	Number	Account Book	21
2 times per day	42	AgriFax (mail-in only)	1
3 times per day	3	On-farm computer	19
Other	1	Other	5

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 1997.

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**  
46 Intensive Grazing Dairy Farms, 1997

Expense Item	Cash Paid	-	Change in Inventory or Prepaid Expense	+	Change in Accounts Payable	=	Accrual Expenses
<u>Hired Labor</u>	\$ 20,835		\$ -3	<<	\$ 175		\$ 21,013
<u>Feed</u>							
Dairy grain & concentrate	56,644		370		573		56,847
Dairy roughage	3,314		457		276		3,133
Nondairy	1		-8		0		9
<u>Machinery</u>							
Machinery hire, rent & lease	3,492		0	<<	-18		3,474
Machinery repairs & farm vehicle exp.	13,411		-8		-342		13,077
Fuel, oil & grease	4,869		-27		-200		4,696
<u>Livestock</u>							
Replacement livestock	2,256		0	<<	0		2,256
Breeding	2,687		0		-84		2,603
Veterinary & medicine	4,549		-10		-12		4,548
Milk marketing	8,042		0	<<	-4		8,039
Bedding	1,255		-1		0		1,256
Milking supplies	5,294		3		-355		4,936
Cattle lease & rent	0		0	<<	0		0
Custom boarding	249		0	<<	0		249
bST expense	1,282		22		15		1,275
Other livestock expense	2,884		-42		62		2,988
<u>Crops</u>							
Fertilizer & lime	4,338		-101		124		4,564
Seeds & plants	2,473		-234		0		2,707
Spray, other crop expense	3,459		-87		-20		3,527
<u>Real Estate</u>							
Land, building & fence repair	2,828		16		-79		2,733
Taxes	6,129		-59	<<	-602		5,587
Rent & lease	2,150		0	<<	-6		2,144
<u>Other</u>							
Insurance	3,297		0	<<	0		3,297
Utilities (farm share)	6,858		0	<<	83		6,940
Interest paid	13,982		0	<<	36		14,018
Miscellaneous	3,283		-11		0		3,294
<b>Total Operating</b>	<b>\$179,863</b>		<b>\$ 276</b>		<b>\$ -376</b>		<b>\$ 179,210</b>
Expansion livestock	1,414		0	<<	0		1,414
Machinery depreciation							8,579
Building depreciation							5,740
<b>TOTAL ACCRUAL EXPENSES</b>							<b>\$ 194,943</b>

Change in prepaid expenses (noted above by <<) is a net change in non-inventory expenses that have been paid in advance of their use. 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 1997 but not paid for. A decrease is subtracted because it represents payment for resources used before 1997.

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**  
46 Intensive Grazing Dairy Farms, 1997

Receipt Item	Cash Receipts	+	Change in Inventory	+	Change in Accounts Receivable	=	Accrual Receipts
Milk sales	\$ 190,654				\$ 1,015		\$ 191,669
Dairy cattle	8,877		\$ 3,565		0		12,441
Dairy calves	1,664				0		1,663
Other livestock	1,396		-257		0		1,138
Crops	1,731		-1,638		-9		84
Government receipts	3,043		-77 *		-18		2,947
Custom machine work	922				32		953
Gas tax refund	210				2		212
Other	<u>3,757</u>				<u>0</u>		3,756
Less nonfarm noncash capital**		(-)	<u>217 **</u>			(-)	<u>217</u>
<b>Total Receipts</b>	<b>\$ 212,253</b>		<b>\$ 1,376</b>		<b>\$ 1,020</b>		<b>\$ 214,648</b>

\*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 1997 for the 1998 crop year in excess of funds earned for 1997. Likewise, a decrease is added to cash government receipts because it represents funds earned for 1997 but received in 1996.

Changes in accounts receivable are calculated by subtracting beginning year balances from end year balances. Payments in January for milk produced in December 1997 compared to January 1997 payments for milk produced in 1996 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.

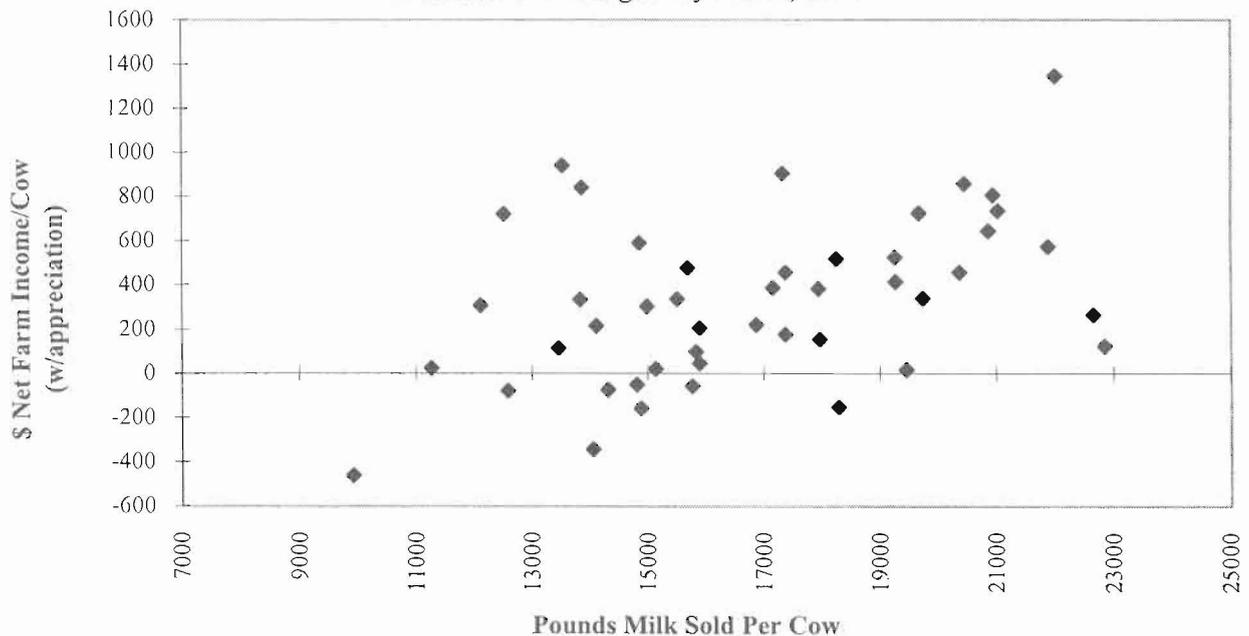
Net farm income is computed both with and without appreciation. Appreciation represents the change in values caused by annual changes in prices of livestock, machinery, real estate inventory, and stocks and certificates (other than Farm Credit). Appreciation is a major factor contributing to changes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

**NET FARM INCOME**  
Intensive Grazing Dairy Farms, 1997

Item	46 Grazing Dairy Farms	19 More Profitable Farms	16 Less Profitable Farms
Total accrual receipts	\$ 214,648	\$ 249,668	\$ 179,174
Appreciation: Livestock	-1,310	-2,288	-591
Machinery	1,443	1,226	370
Real Estate	6,484	3,964	12,711
Other Stock & Certificates	392	603	145
Total Including Appreciation	\$ 221,657	\$ 253,173	\$ 191,809
Total accrual expenses	- 194,943	- 209,410	- 191,614
Net Farm Income (with appreciation)	\$ 26,714	\$ 43,763	\$ 195
Net Farm Income Per Cow (with appreciation)	\$ 326	\$ 492	\$ 3
Net Farm Income (without appreciation)	\$ 19,705	\$ 40,258	\$ -12,440
Net Farm Income Per Cow (without appreciation)	\$ 240	\$ 452	\$ -164

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**  
46 Intensive Grazing Dairy Farms, 1997



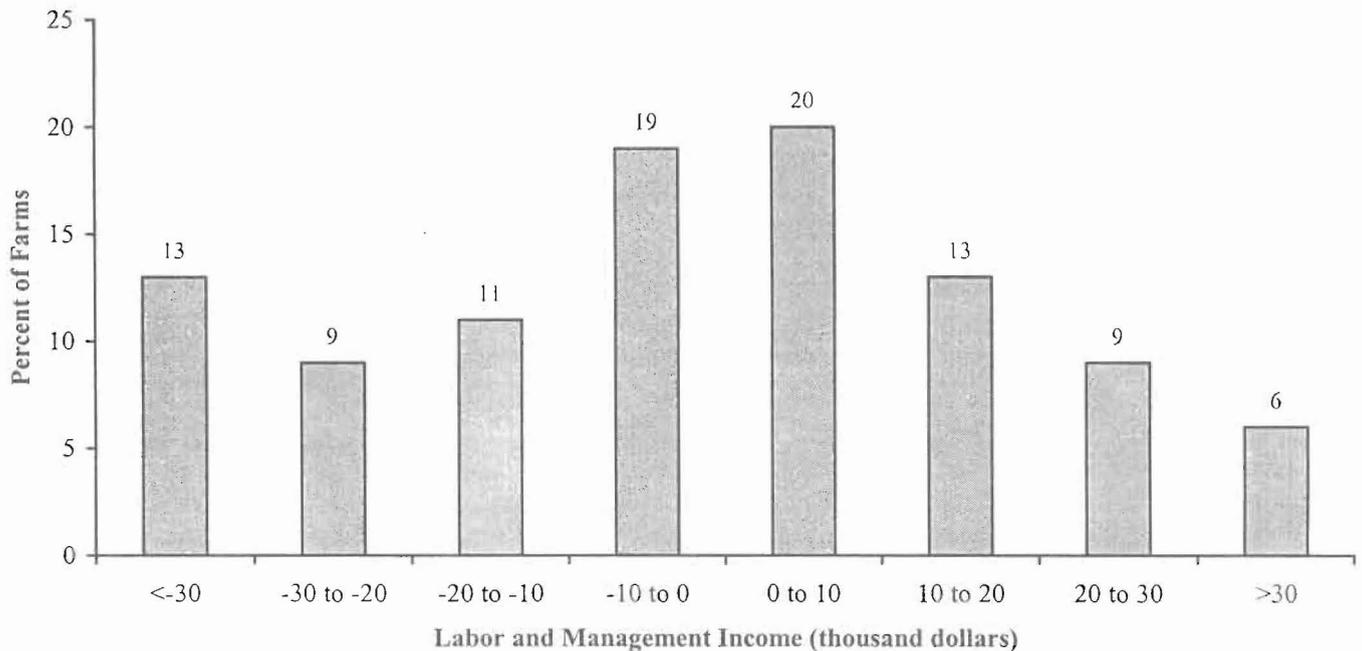
Labor and management income is the return which farm operators receive for their labor and management used in the farm business. Appreciation is not included as part of the return to labor and management because it results from ownership of assets rather than management of the farm business. Labor and 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, 1997

Item	46 Grazing Dairy Farms	19 More Profitable Farms	16 Less Profitable Farms
Net farm income without appreciation	\$ 19,705	\$ 40,258	\$ -12,440
Family labor unpaid @ \$1,550 per month	- 6,045	- 6,200	- 6,510
Interest on average equity capital @ 5% real rate	- 16,806	- 18,964	- 16,587
Labor & Management Income per farm	\$ -3,146	\$ 15,094	\$ -35,537
Labor & Management Income per Operator/Manager	\$ -2,348	\$ 11,435	\$ -29,614

Labor and management income per operator averaged \$-2,348 on these 46 farms in 1997. The range in labor and management income per operator was from less than \$-55,000 to more than \$39,000. Returns to labor and management were negative on 52 percent of the farms. Labor and management income per operator was between \$0 and \$20,000 on 33 percent of the farms while 15 percent showed labor and management incomes of \$20,000 or more per operator.

**DISTRIBUTION OF LABOR & MANAGEMENT INCOMES PER OPERATOR**  
46 Intensive Grazing Dairy Farms, 1997



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 zero, and as you move away from zero in either direction, there is generally a smaller percentage of the farms. One comparison to make to the state distribution is the percentage of farms that were above zero, or had a positive return to labor and management. For

the intensive grazing farms, 48% of the farms had returns that were positive, while for the 253 farms across the state, only 42% had returns greater than zero in 1997.

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

**RETURN ON EQUITY CAPITAL AND RETURN ON TOTAL CAPITAL**  
Intensive Grazing Dairy Farms, 1997

Item	46 Grazing Dairy Farms	19 More Profitable Farms	16 Less Profitable Farms
Net farm income with appreciation	\$ 26,714	\$ 43,763	\$ 195
Family labor unpaid @\$1,550 per month	- 6,045	- 6,200	- 6,510
Value of operators' labor & management	- 29,189	- 31,195	- 25,251
Return on equity capital with appreciation	\$ -8,520	\$ 6,368	\$ -31,566
Interest paid	+ 14,018	+ 12,776	+ 16,860
Return on total capital with appreciation	\$ 5,498	\$ 19,144	\$ -14,706
Return on equity capital without appreciation	\$ -15,529	\$ 2,863	\$ -44,201
Return on total capital without appreciation	\$ -1,511	\$ 15,639	\$ -27,341
Rate of return on average equity capital:			
with appreciation	-2.5%	1.7%	-9.5%
without appreciation	-4.6%	0.8%	-13.3%
Rate of return on average total capital:			
with appreciation	1.0%	8.0%	-2.7%
without appreciation	-0.3%	2.8%	-5.0%

**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 1997, lease payments were discounted by 9.25 percent to obtain their present value.

Advanced government receipts are included as current liabilities. Government payments received in 1997 that are for participation in the 1998 program are the end year balance and payments received in 1996 for participation in the 1997 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.

**1997 FARM BUSINESS & NONFARM BALANCE SHEET**  
46 Intensive Grazing Dairy Farms, 1997

Farm Assets			Farm Liabilities & Net Worth		
	Jan. 1	Dec. 31		Jan. 1	Dec. 31
<u>Current</u>			<u>Current</u>		
Farm cash, checking & savings	\$ 5,511	\$ 5,808	Accounts payable	\$ 7,654	\$ 7,278
Accounts receivable	13,874	14,894	Operating debt	7,189	6,083
Prepaid expenses	86	25	Short Term	858	1,747
Feed & supplies	35,283	33,984	Advanced govt. receipts	17	94
			Current Portion:		
			Intermediate	13,008	15,250
			Long Term	4,189	4,831
<b>Total Current</b>	<b>\$ 54,754</b>	<b>\$ 54,711</b>	<b>Total Current</b>	<b>\$ 32,915</b>	<b>\$ 35,283</b>
<u>Intermediate</u>			<u>Intermediate</u>		
Dairy cows:			Structured debt		
owned	\$ 82,496	\$ 83,786	1-10 years	\$ 65,490	\$ 63,808
leased	0	0	Financial lease		
Heifers	33,377	34,321	(cattle/machinery)	1,805	2,821
Bulls & other livestock	1,476	1,240	Farm Credit stock	1,713	1,260
Mach. & equip. owned	89,524	92,178	<b>Total Intermediate</b>	<b>\$ 69,008</b>	<b>\$ 67,889</b>
Mach. & equip. leased	1,805	2,821			
Farm Credit stock	1,713	1,260			
Other stock/certificate	4,227	2,632			
<b>Total Intermediate</b>	<b>\$ 214,618</b>	<b>\$ 218,238</b>			
<u>Long Term</u>			<u>Long Term</u>		
Land & buildings:			Structured debt		
owned	\$ 253,272	\$ 255,362	>10 years	\$ 89,549	\$ 84,089
leased	898	788	Financial lease		
<b>Total Long Term</b>	<b>\$ 254,170</b>	<b>\$ 256,150</b>	(structures)	898	788
			<b>Total Long Term</b>	<b>\$ 90,447</b>	<b>\$ 84,877</b>
<b>Total Farm Assets</b>	<b>\$ 523,542</b>	<b>\$ 529,099</b>	<b>Total Farm Liab.</b>	<b>\$ 192,370</b>	<b>\$ 188,049</b>
			<b>FARM NET WORTH</b>	<b>\$ 331,172</b>	<b>\$ 341,050</b>

Nonfarm Assets, Liabilities & Net Worth (Average of 33 farms reporting)

Assets			Liabilities & Net Worth		
	Jan. 1	Dec. 31		Jan. 1	Dec. 31
Personal cash, checking & savings	\$ 2,540	\$ 3,575	Nonfarm Liabilities	\$ 3,295	\$ 3,235
Cash value life insurance	9,554	10,610			
Nonfarm real estate	14,897	14,897			
Auto (personal share)	2,952	2,953			
Stocks & bonds	7,299	8,533			
Household furnishings	9,909	10,203			
All other nonfarm assets	3,391	5,105			
<b>Total Nonfarm Assets</b>	<b>\$ 50,542</b>	<b>\$ 55,876</b>	<b>NONFARM NET WORTH</b>	<b>\$ 47,247</b>	<b>\$ 52,641</b>

Farm & Nonfarm Assets, Liabilities, and Net Worth\*

	Jan. 1	Dec. 31
Total Assets	\$ 574,084	\$ 584,975
Total Liabilities	195,665	191,284
<b>TOTAL FARM &amp; NONFARM NET WORTH</b>	<b>\$ 378,419</b>	<b>\$ 393,691</b>

\*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. Debt levels per productive unit represent old standards that are still useful if used with measures of cash flow and repayment ability.

**BALANCE SHEET ANALYSIS**  
Intensive Grazing Dairy Farms, 1997

Item	46 Grazing Dairy Farms	19 More Profitable Farms	16 Less Profitable Farms
<u>Financial Ratios - Farm:</u>			
Percent equity	64%	68%	61%
Debt/asset ratio: total	0.36	0.32	0.39
long-term	0.33	0.30	0.34
intermediate/current	0.38	0.33	0.44
<u>Farm Debt Analysis:</u>			
Accounts payable as % of total debt	4%	2%	6%
Long-term liabilities as a % of total debt	45%	45%	46%
Current & inter. liabilities as a % of total debt	55%	55%	54%
<hr/>			
	46 Grazing Dairy Farms	19 More Profitable Farms	16 Less Profitable Farms
	Per Tillable Acre Owned	Per Tillable Acre Owned	Per Tillable Acre Owned
<u>Farm Debt Levels:</u>	Per Cow	Per Cow	Per Cow
Total farm debt	\$ 2,239	\$ 2,033	\$ 2,711
Long-term debt	1,010	925	1,257
Intermediate & long term	1,819	1,654	2,200
Intermediate & current debt	1,228	1,108	1,453
	\$ 1,254	\$ 1,052	\$ 1,479
	566	478	686
	1,018	856	1,200
	688	573	793

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**  
46 Intensive Grazing Dairy Farms, 1997

Item	Real Estate	Machinery & Equipment
Value beginning of year	\$ 253,272	\$ 89,524
Purchases	\$ 3,726*	\$ 10,464
Gift & inheritance	+ 0	+ 0
Lost capital	- 1,334	
Sales	- 1,047	- 672
Depreciation	- 5,740	- 8,579
Net investment	= -4,394	= 1,211
Appreciation	+ 6,484	+ 1,443
Value end of year	\$ 255,362	\$ 92,178

\*\$1,163 land and \$2,563 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, 1997

Item	46 Grazing Dairy Farms	19 More Profitable Farms	16 Less Profitable Farms
Beginning of year farm net worth	\$ 331,172	\$ 370,756	\$ 332,625
Net farm income w/o appreciation	\$ 19,705	\$ 40,258	\$ -12,440
+Nonfarm cash income	+ 12,621	+ 10,213	+ 20,519
-Personal withdrawals & family expenditures excluding nonfarm borrowings	- 28,714	- 35,409	- 21,631
RETAINED EARNINGS	+\$ 3,612	+\$ 15,062	+\$ -13,552
Nonfarm noncash transfers to farm	\$ 217	\$ 0	\$ 0
+Cash used in business from nonfarm capital	+ 2,049	+ 2,126	+ 2,804
-Note or mortgage from farm real estate sold (nonfarm)	- 978	- 0	- 2,813
CONTRIBUTED/ WITHDRAWN CAPITAL	+\$ 1,288	+\$ 2,126	+\$ -9
Appreciation	\$ 7,009	\$ 3,505	\$ 12,635
-Lost capital	- 1,334	- 3,048	- 9
CHANGE IN VALUATION EQUITY	+\$ 5,675	+\$ 457	+\$ 12,626
IMBALANCE/ERROR	- 697	- 607	- 821
End of year net worth*	=\$341,050	=\$387,794	=\$330,869
Change in net worth w/appreciation	\$ 9,878	\$ 17,038	\$ -1,756
<u>Change in Net Worth</u>			
Without appreciation	\$ 2,869	\$ 13,533	\$ -14,391
With appreciation	\$ 9,878	\$ 17,038	\$ -1,756

\*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**  
46 Intensive Grazing Dairy Farms, 1997

Item	Average	
<u>Cash Flow from Operating Activities</u>		
Cash farm receipts	\$ 212,253	
- Cash farm expenses	<u>179,863</u>	
= Net cash farm income		\$ 32,390
Personal withdrawals & family expenses including nonfarm debt payments	\$ 29,791	
- Nonfarm income	<u>12,621</u>	
- Net cash withdrawals from the farm		\$ <u>17,170</u>
= Net Provided by Operating Activities		\$ 15,220
<u>Cash Flow From Investing Activities</u>		
Sale of assets: machinery	\$ 672	
+ real estate	68	
+ other stock & cert.	<u>2,020</u>	
= Total asset sales		\$ 2,760
Capital purchases: expansion livestock	\$ 1,414	
+ machinery	10,464	
+ real estate	3,726	
+ other stock& cert.	<u>33</u>	
- Total invested in farm assets		\$ <u>15,637</u>
= Net Provided by Investment Activities		\$ -12,877
<u>Cash Flow From Financing Activities</u>		
Money borrowed (intermediate & long term)	\$ 20,956	
+ Money borrowed (short term)	1,521	
+ Increase in operating debt	0	
+ Cash from nonfarm capital used in business	2,049	
+ Money borrowed - nonfarm	<u>1,077</u>	
= Cash inflow from financing		\$ 25,603
Principal payments (intermediate & long term)	\$ 25,214	
+ Principal payments (short term)	632	
+ Decrease in operating debt	<u>1,106</u>	
- Cash outflow for financing		\$ <u>26,952</u>
= Net Provided by Financing Activities		\$ -1,349
<u>Cash Flow From Reserves</u>		
Beginning farm cash, checking & savings		\$ 5,511
- Ending farm cash, checking & savings		<u>5,808</u>
= Net Provided from Reserves		\$ -297
Imbalance (error)		\$ 697

### 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 1998. The cash flow projection worksheet on the next page can be used to estimate repayment ability, which can then be compared to planned 1998 debt payments shown below.

#### FARM DEBT PAYMENTS PLANNED

Same Intensive Grazing Dairy Farms, 1996 & 1997

Debt Payments	Same 40 Grazing			Same 16 More Profitable Farms			Same 13 Less Profitable Farms		
	1997 Payments		Planned 1998	1997 Payments		Planned 1998	1997 Payments		Planned 1998
	Planned	Made		Planned	Made		Planned	Made	
Long term	\$ 10,586	\$ 12,806	\$ 11,026	\$ 11,553	\$ 13,719	\$ 11,842	\$ 11,122	\$ 15,217	\$ 12,104
Intermediate term	20,655	27,376	21,221	21,655	23,500	23,897	20,074	39,341	22,116
Short term	44	192	1,204	40	287	2,905	86	86	0
Operating (net reduction)	1,446	1,255	1,712	2,071	551	2,041	1,180	2,564	1,731
Accounts Pay. (net reduction)	1,019	0	1,448	1,066	0	1,224	1,826	612	2,612
Total	\$ 33,750	\$ 41,629	\$ 36,611	\$ 36,385	\$ 38,057	\$ 41,909	\$ 34,288	\$ 57,820	\$ 38,563
Per cow	\$ 417	\$ 514		\$ 409	\$ 428		\$ 451	\$ 761	
Per cwt. 1997 milk	\$ 2.36	\$ 2.91		\$ 2.18	\$ 2.28		\$ 2.82	\$ 4.76	
Percent of total 1997 farm receipts	16%	19%		14%	15%		19%	32%	
Percent of 1997 milk receipts	18%	22%		16%	17%		21%	36%	

The cash flow coverage ratio measures the ability of the farm business to meet its planned debt payment schedule. The ratio shows the percentage of payments planned for 1997 (as of December 31, 1996) that could have been made with the amount available for debt service in 1997. Farmers who did not participate in DFBS in 1996 have their 1997 cash flow coverage ratio based on planned debt payments for 1998.

#### CASH FLOW COVERAGE RATIO

Same Intensive Grazing Dairy Farms, 1996 & 1997

Item	Same 40 Grazing Farms	Same 16 More Profitable Farms	Same 13 Less Profitable Farms
Cash farm receipts	\$ 212,803	\$ 247,615	\$ 182,836
- Cash farm expenses	177,887	190,089	177,837
+ Interest paid	13,117	12,988	14,407
- Net personal withdrawals from farm*	17,635	27,605	4,080
(A) = Amount Available for Debt Service	\$ 30,398	\$ 42,909	\$ 15,326
(B) = Debt Payments Planned for 1997 (as of December 31, 1996)	\$ 33,750	\$ 36,385	\$ 34,288
(A/B) = Cash Flow Coverage Ratio for 1997	0.90	1.18	0.45

\*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, 1997

Item	46 Grazing Dairy Farms		19 More Profitable Farms		16 Less Profitable Farms	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average no. of cows	82		89		76	
Total cwt. of milk sold		14,227		16,267		12,238
<u>Accrual Oper. Receipts</u>						
Milk	\$ 2,337	\$ 13.47	\$ 2,473	\$ 13.53	\$ 2,144	\$ 13.31
Dairy cattle	152	0.87	173	0.95	120	0.74
Dairy calves	20	0.12	21	0.12	17	0.11
Other livestock	14	0.08	10	0.06	14	0.09
Crops	1	0.01	21	0.12	-25	-0.15
Misc. Receipts	<u>93</u>	<u>0.54</u>	<u>106</u>	<u>0.58</u>	<u>87</u>	<u>0.54</u>
Total	\$ 2,617	\$ 15.09	\$ 2,805	\$ 15.35	\$ 2,358	\$ 14.64
<u>Accrual Operating Expenses</u>						
Hired labor	\$ 256	\$ 1.48	\$ 278	\$ 1.52	\$ 263	\$ 1.63
Dairy grain & concentrate	693	4.00	674	3.69	666	4.14
Dairy roughage	38	0.22	38	0.21	50	0.31
Nondairy feed	0	0.00	0	0.00	0	0.00
Mach. hire, rent & lease	42	0.24	37	0.20	43	0.27
Mach. repair & vehicle expense	159	0.92	154	0.84	202	1.25
Fuel, oil & grease	57	0.33	50	0.27	69	0.43
Replacement livestock	28	0.16	16	0.09	38	0.24
Breeding	32	0.18	44	0.24	24	0.15
Vet & medicine	55	0.32	58	0.32	50	0.31
Milk marketing	98	0.57	100	0.55	102	0.63
Bedding	15	0.09	14	0.07	22	0.14
Milking supplies	60	0.35	55	0.30	67	0.42
Cattle lease	0	0.00	0	0.00	1	0.00
Custom boarding	3	0.02	0	0.00	5	0.03
bST expense	16	0.09	19	0.11	8	0.05
Other livestock expense	36	0.21	40	0.22	32	0.20
Fertilizer & lime	56	0.32	69	0.38	48	0.30
Seeds & plants	33	0.19	33	0.18	33	0.21
Spray & other crop expense	43	0.25	45	0.24	41	0.26
Land, bldg., fence repair	33	0.19	36	0.20	34	0.21
Taxes	68	0.39	70	0.38	76	0.47
Real estate rent & lease	26	0.15	27	0.15	31	0.19
Insurance	40	0.23	38	0.21	45	0.28
Utilities	85	0.49	76	0.41	105	0.65
Miscellaneous	<u>40</u>	<u>0.23</u>	<u>34</u>	<u>0.18</u>	<u>46</u>	<u>0.28</u>
Total Less Interest Paid	\$ 2,015	\$ 11.61	\$ 2,004	\$ 10.96	\$ 2,103	\$ 13.06
<u>Net Accrual Operating Income</u>		<u>Total</u>		<u>Total</u>		<u>Total</u>
(without interest paid)	\$ 49,456		\$ 71,353		\$ 19,364	
- Change in livestock & crop invent.*	1,376		4,090		-3,480	
- Change in accounts receivable	1,020		1,187		1,061	
- Change in feed & supply inventory**	276		-519		1,410	
+ Change in accounts payable***	<u>-412</u>		<u>59</u>		<u>-3,010</u>	
NET CASH FLOW	\$ 46,372		\$ 66,653		\$ 17,362	
- Net family withdrawals	<u>- 16,093</u>		<u>- 25,196</u>		<u>- 1,112</u>	
Available for Farm	\$ 30,279		\$ 41,457		\$ 16,250	
- Farm debt payments	<u>- 40,623</u>		<u>- 35,514</u>		<u>- 56,771</u>	
Available for Farm Investment	\$ -10,344		\$ 5,943		\$ -40,521	
- Capital purchases	\$ 15,637		\$ 25,332		\$ 9,074	
Additional Capital Needed	\$ 25,981		\$ 19,389		\$ 49,595	

\*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, 1997

Item	46 Grazing Dairy Farms			19 More Profitable Farms			16 Less Profitable Farms		
	Owned	Rented	Total	Owned	Rented	Total	Owned	Rented	Total
<u>Land</u>									
Tillable	150	83	234	174	70	244	143	89	232
Nontillable	48	18	65	44	12	56	54	24	78
Other nontill.	104	8	112	105	17	122	95	1	96
Total	302	109	411	323	99	422	292	114	406
<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	44	127	2.1 tn DM	18	131	2.4 tn DM	15	117	2.1 tn DM
Corn silage	37	61	14.1 tn 4.4 tn DM	14	52	13.9 tn 4.5 tn DM	12	76	13.9 tn 4.2 tn DM
Other forage	7	28	1.9 tn DM	3	36	2.3 tn DM	2	41	1.3 tn DM
Total forage	44	182	2.8 tn DM	18	177	2.9 tn DM	15	183	2.8 tn DM
Corn grain	9	54	106 bu	7	44	109 bu	2	89	101 bu
Oats	2	36	48 bu	2	36	48 bu	0	0	0 bu
Wheat	0	0	0 bu	0	0	0 bu	0	0	0 bu
Other crops	5	23		2	18		3	26	
Tillable pasture	31	60		14	72		9	64	
Idle	10	20		4	10		5	26	
Total Tillable Acres	46	234		19	244		16	232	

\*This column represents the average acreage for the farms producing that crop. For the 46 New York dairy farms, average acreages including those farms not producing were hay crop 121, corn silage 49, corn grain 11, oats 2, wheat 0, tillable pasture 40, and idle 4.

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, 1997

Item	46 Grazing Dairy Farms	19 More Profitable Farms	16 Less Profitable Farms
Total tillable acres per cow	2.85	2.74	3.05
Total forage acres per cow	2.12	1.89	2.25
Harvested forage dry matter, tons per cow	5.90	5.38	6.28

**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, 1997

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
<u>All Grazing Farms</u>								
No. of farms reporting	46	12			11		7	
Ave. number of acres	234	64			123		19	99
Fert. & lime	\$ 19.50	\$ 31.16	\$ 6.91	\$ 0.35	\$ 14.74	\$ 6.97	\$ 52.16	\$ 10.01
Seeds & plants	11.57	31.86	7.07	0.36	7.30	3.45	6.63	1.27
Spray & other	<u>15.07</u>	<u>41.27</u>	<u>9.15</u>	<u>0.47</u>	<u>3.77</u>	<u>1.78</u>	<u>0.00</u>	<u>0.00</u>
TOTAL	\$ 46.14	\$ 104.29	\$ 23.13	\$ 1.18	\$ 25.81	\$ 12.20	\$ 58.79	\$ 11.28
<u>More Profitable Grazing Farms</u>								
No. of farms reporting	19	5			4		3	
Ave. number of acres	244	49			128		13	146
Fert. & lime	\$ 25.07	\$ 21.39	\$ 4.75	\$ 0.26	\$ 11.87	\$ 5.17	\$ 107.69	\$ 9.66
Seeds & plants	12.19	32.45	7.21	0.40	5.21	2.27	19.85	1.78
Spray & other	<u>16.31</u>	<u>49.96</u>	<u>11.10</u>	<u>0.61</u>	<u>6.66</u>	<u>2.90</u>	<u>0.00</u>	<u>0.00</u>
TOTAL	\$ 53.57	\$ 103.80	\$ 23.06	\$ 1.27	\$ 23.74	\$ 10.34	\$ 127.54	\$ 11.44
<u>Less Profitable Grazing Farms</u>								
No. of farms reporting	16	2			3		2	
Ave. number of acres	232	62			111		21	74
Fert. & lime	\$ 15.81	\$ 25.45	\$ 7.81	\$ 0.00	\$ 17.47	\$ 8.39	\$ 32.05	\$ 9.09
Seeds & plants	10.91	27.42	8.42	0.00	7.80	3.75	2.57	0.73
Spray & other	<u>13.47</u>	<u>31.31</u>	<u>9.61</u>	<u>0.00</u>	<u>3.81</u>	<u>1.83</u>	<u>0.00</u>	<u>0.00</u>
TOTAL	\$ 40.19	\$ 84.18	\$ 25.84	\$ 0.00	\$ 29.08	\$ 13.97	\$ 34.62	\$ 9.82

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, 1997

Machinery Expense	46 Grazing Dairy		19 More Profitable		16 Less Profitable	
	Total Expenses	Per Till. Acre	Total Expenses	Per Till. Acre	Total Expenses	Per Till. Acre
Fuel, oil & grease	\$ 4,696	\$ 20.07	\$ 4,464	\$ 18.30	\$ 5,263	\$ 22.69
Mach. repair & vehicle exp.	13,077	55.88	13,594	56.12	15,328	66.07
Machine hire, rent & lease	3,474	14.85	3,260	13.36	3,272	14.10
Interest (5%)	4,658	19.91	4,991	20.45	4,218	18.18
Depreciation	<u>8,579</u>	<u>36.66</u>	<u>10,203</u>	<u>41.82</u>	<u>7,266</u>	<u>31.32</u>
Total	\$ 34,484	\$ 147.37	\$ 36,612	\$ 150.05	\$ 35,347	\$ 152.36

**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 17 and 18.

**DAIRY HERD INVENTORY**  
Intensive Grazing Dairy Farms, 1997

Item	Dairy Cows		Heifer					
	No.	Value	Bred		Open		Calves	
	No.	Value	No.	Value	No.	Value	No.	Value
<b>46 Grazing Dairy Farms</b>								
Beg. year (owned)	82	\$ 82,496	20	\$ 17,537	20	\$ 10,793	17	\$ 5,048
+ Change w/o apprec.		2,083		1,003		1,194		-716
+ Appreciation		<u>-793</u>		<u>-237</u>		<u>-166</u>		<u>-135</u>
End year (owned)	84	\$ 83,786	21	\$ 18,303	23	\$ 11,821	15	\$ 4,197
End including leased	84							
Average number	82		57	(all age groups)				
<b>19 More Profitable Dairy Farms</b>								
Beg. year (owned)	87	\$ 90,776	25	\$ 21,474	22	\$ 11,923	19	\$ 5,311
+ Change w/o apprec.		2,809		15		2,097		-1,292
+ Appreciation		<u>-1,314</u>		<u>-314</u>		<u>-378</u>		<u>-283</u>
End year (owned)	90	\$ 92,271	24	\$ 21,175	28	\$ 13,642	15	\$ 3,736
End including leased	90							
Average number	89		66	(all age groups)				
<b>16 Less Profitable Dairy Farms</b>								
Beg. year (owned)	76	\$ 75,444	17	\$ 15,438	20	\$ 12,053	14	\$ 4,677
+ Change w/o apprec.		753		2,612		-1,397		214
+ Appreciation		<u>-713</u>		<u>-47</u>		<u>38</u>		<u>106</u>
End year (owned)	77	\$ 75,484	20	\$ 18,003	18	\$ 10,694	15	\$ 4,997
End including leased	78							
Average number	76		52	(all age groups)				

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

**MILK PRODUCTION**  
Intensive Grazing Dairy Farms, 1997

Item	46 Grazing Dairy Farms	19 More Profitable Dairy Farms	16 Less Profitable Dairy Farms
Total milk sold, lbs.	1,422,734	1,626,657	1,223,767
Milk sold per cow, lbs.	17,277	18,288	16,155
Average milk plant test, percent butterfat	3.68%	3.72%	3.63%

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, 1997

Item	46 Grazing Dairy Farms		19 More Profitable Dairy Farms		16 Less Profitable Dairy Farms	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
<u>Accrual Cost of Producing Milk</u>						
Operating costs	\$ 1,923	\$ 11.08	\$ 1,850	\$ 10.12	\$ 2,111	\$ 13.11
Purchased inputs costs	\$ 2,097	\$ 12.09	\$ 2,021	\$ 11.06	\$ 2,307	\$ 14.33
Total Costs	\$ 2,732	\$ 15.74	\$ 2,654	\$ 14.52	\$ 2,943	\$ 18.28
<u>Accrual Receipts From Milk</u>						
Net Farm Income without Apprec.	\$ 240	\$ 1.39	\$ 452	\$ 2.47	\$ -164	\$ -1.02
Net Farm Income with Apprec.	\$ 326	\$ 1.88	\$ 492	\$ 2.69	\$ 3	\$ 0.02

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, 1997

Item	46 Grazing Dairy Farms		19 More Profitable Dairy Farms		16 Less Profitable Dairy Farms	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Purchased dairy grain & concentrate	\$ 693	\$ 4.00	\$ 674	\$ 3.69	\$ 666	\$ 4.14
Purchased dairy roughage	38	0.22	38	0.20	50	0.31
Total Purchased Dairy Feed	\$ 731	\$ 4.22	\$ 711	\$ 3.89	\$ 716	\$ 4.45
Purchased grain & conc. as % of milk receipts		30%		27%		31%
Purchased feed & crop exp.	\$ 863	\$ 4.97	\$ 858	\$ 4.69	\$ 839	\$ 5.21
Purchased feed & crop exp. as % of milk receipts		37%		35%		39%
Breeding	\$ 32	\$ 0.18	\$ 44	\$ 0.24	\$ 24	\$ 0.15
Veterinary & medicine	55	0.32	58	0.32	50	0.31
Milk marketing	98	0.57	100	0.55	102	0.63
Bedding	15	0.09	14	0.07	22	0.14
Milking supplies	60	0.35	55	0.30	67	0.42
Cattle lease	0	0.00	0	0.00	1	0.00
Custom boarding	3	0.02	0	0.00	5	0.03
bST expense	16	0.09	19	0.11	8	0.05
Other livestock expense	36	0.21	40	0.22	32	0.20

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, 1997

Item	Per Worker	Per Cow	Per Tillable Acre	Per Tillable Acre Owned
<u>46 Grazing Dairy Farms</u>				
Farm capital	\$ 188,646	\$ 6,419	\$ 2,249	\$ 3,509
Real estate		3,112		1,701
Machinery & equipment	33,392	1,136	398	
Asset turnover ratio		0.42		
<u>19 More Profitable Dairy Farms</u>				
Farm capital	\$ 197,629	\$ 6,373	\$ 2,325	\$ 3,260
Real estate		3,055		1,563
Machinery & equipment	34,783	1,122	409	
Asset turnover ratio		0.45		
<u>16 Less Profitable Dairy Farms</u>				
Farm capital	\$ 185,994	\$ 7,146	\$ 2,341	\$ 3,798
Real estate		3,748		1,992
Machinery & equipment	28,888	1,110	364	
Asset turnover ratio		0.35		

Capital and Labor Efficiency Analysis (continued)

**LABOR FORCE INVENTORY AND ANALYSIS**  
Intensive Grazing Dairy Farms, 1997

Labor Force	Months	Age	Years of Educ.	Value of Labor & Mgmt.
<u>46 Grazing Dairy Farms</u>				
Operator number 1	13.3	47	14	\$ 23,254
Operator number 2	3.1	48	12	4,913
Operator number 3	0.6	47	14	1,022
Family paid	3.4			
Family unpaid	3.9			
Hired	9.2			
Total	33.4	/ 12 = 2.79 Worker Equivalent 1.34 Operator/Manager Equivalent		
<u>19 More Profitable Dairy Farms</u>				
Total Labor Force	34.4	/ 12 = 2.87 Worker Equivalent		
Operator's Labor		1.32 Operator/Manager Equivalent		
<u>16 Less Profitable Dairy Farms</u>				
Total Labor Force	35.0	/ 12 = 2.92 Worker Equivalent		
Operator's Labor		1.20 Operator/Manager Equivalent		

Labor Efficiency	46 Grazing Dairy Farms		19 More Profitable Dairy Farms		16 Less Profitable Dairy Farms	
	Total	Per Worker	Total	Per Worker	Total	Per Worker
Cows, average number	82	29	89	31	76	26
Milk sold, pounds	1,422,734	509,941	1,626,657	566,779	1,223,767	419,098
Tillable acres	234	84	244	85	232	79
Work units	815	292	881	307	764	262

Labor Costs	46 Grazing Dairy Farms		19 More Profitable Dairy Farms		16 Less Profitable Dairy Farms	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Value of operator(s) labor (\$1,550/mo.)	\$ 321	\$ 1.85	\$ 291	\$ 1.59	\$ 328	\$ 2.04
Family unpaid (\$1,550/mo.)	74	0.42	70	0.38	86	0.53
Hired	256	1.48	278	1.52	263	1.63
Total Labor	\$ 651	\$ 3.75	\$ 639	\$ 3.50	\$ 677	\$ 4.21
Machinery Cost	\$ 421	\$ 2.42	\$ 411	\$ 2.25	\$ 465	\$ 2.89
Total Labor & Mach.	\$ 1,072	\$ 6.18	\$ 1,050	\$ 5.75	\$ 1,142	\$ 7.09

## 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, 1996 &amp; 1997

Selected Factors	Same 40 New York Dairy Farms		Same 16 More Profitable Dairy Farms		Same 13 Less Profitable Dairy Farms	
	1996	1997	1996	1997	1996	1997
<u>Size of Business</u>						
Average number of cows	79	81	86	89	76	76
Average number of heifers	60	60	67	70	56	55
Milk sold, lbs.	1,422,412	1,430,910	1,631,185	1,666,619	1,265,241	1,214,289
Worker equivalent	2.64	2.73	2.67	2.79	2.66	2.84
Total tillable acres	227	231	247	251	224	232
<u>Rates of Production</u>						
Milk sold per cow, lbs.	79,931	17,638	18,981	18,739	16,750	16,042
Hay DM per acre, tons	2.5	2.2	3.0	2.4	2.2	2.1
Corn silage per acre, tons	14.6	14.4	15.9	13.9	15.0	14.1
<u>Labor Efficiency</u>						
Cows per worker	30	30	32	32	29	27
Milk sold/worker, lbs.	538,792	524,143	610,931	597,354	475,655	427,567
<u>Cost Control</u>						
Grain & conc. purchased as % of milk sales	31%	30%	28%	27%	35%	32%
Dairy feed & crop exp. per cwt. milk	\$ 5.48	\$ 5.02	\$ 5.03	\$ 4.61	\$ 5.99	\$ 5.33
Labor & mach. costs/cow	\$ 1,083	\$ 1,098	\$ 1,030	\$ 1,081	\$ 1,095	\$ 1,124
Operating cost of producing cwt. of milk	\$ 11.05	\$ 10.99	\$ 9.73	\$ 9.83	\$ 12.80	\$ 13.15
<u>Capital Efficiency**</u>						
Farm capital per cow	\$ 6,696	\$ 6,652	\$ 6,681	\$ 6,584	\$ 7,175	\$ 7,298
Mach. & equip. per cow	\$ 1,190	\$ 1,202	\$ 1,163	\$ 1,188	\$ 987	\$ 1,077
Asset turnover ratio	0.47	0.41	0.49	0.44	0.41	0.35
<u>Profitability</u>						
Net farm income w/o apprec.	\$ 37,006	\$ 19,248	\$ 66,199	\$ 41,913	\$ 7,159	\$ -11,660
Net farm income w/apprec.	\$ 45,441	\$ 26,971	\$ 72,407	\$ 46,454	\$ 19,659	\$ 2,033
Labor & mgt. income per operator/manager	\$ 9,833	\$ -3,560	\$ 29,944	\$ 11,623	\$ -16,262	\$ -31,208
Rate of return on equity capital w/appreciation	2.5%	-2.2%	8.0%	2.0%	-3.7%	-8.5%
Rate of return on all capital w/appreciation	4.1%	1.0%	7.9%	3.6%	0.5%	-2.7%
<u>Financial Summary</u>						
Farm net worth, end year	\$ 367,527	\$ 363,893	\$ 430,797	\$ 422,847	\$ 346,232	\$ 343,298
Debt to asset ratio	0.32	0.33	0.27	0.28	0.37	0.38
Farm debt per cow	\$ 2,189	\$ 2,168	\$ 1,865	\$ 1,864	\$ 2,711	\$ 2,714

\*Farms participating both years.

\*\*Average for the year.

### 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

46 Intensive Grazing Dairy Farms, 1997

Size of Business			Rate of Production			Labor Efficiency	
Worker Equivalent	No. of Cows	Pounds of 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)
4.98	186	3,326,764	21,457	3.7	20	43	773,006
3.18	84	1,522,886	18,879	2.7	16	32	580,129
2.52	61	1,060,756	16,615	2.2	14	29	495,262
1.99	48	777,012	14,924	1.7	12	24	376,113
1.42	38	525,901	12,714	1.0	9	17	251,795

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)	
\$435	21%	\$218	\$757	\$549	\$3.53	
561	27	335	985	735	4.56	
653	30	423	1,155	878	5.13	
827	33	494	1,281	993	5.80	
941	42	632	1,550	1,122	6.65	

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)
\$2,916	\$8.03	\$13.33	\$76,590	\$70,156	\$27,062	\$46,317
2,601	10.05	14.93	35,249	32,593	9,363	16,373
2,216	10.86	16.45	22,665	17,574	-879	8,102
1,980	12.12	17.64	8,771	5,520	-11,134	-1,196
1,657	14.14	22.47	-6,063	-22,616	-44,455	-17,211

\*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 of writing down and agreeing on goals that you have already given some thought to. It is also important to remember that once you write out your goals they are not cast in concrete. If a change takes place which has a major impact on the farm business, the goals should be reworked to accommodate that change. Refer to your goals as often as necessary to keep the farm business progressing.

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

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

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

#### Worksheet for Setting Goals

I. Mission and Objectives

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Worksheet for Setting Goals (Continued)

II. Goals

What	How	When	Who is Responsible
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Summarize Your Business Performance

The Farm Business and Financial Analysis Charts on page 33 can be used to help identify strengths and weaknesses of your farm business. Identify three major strengths and three areas of your farm business that need improvement.

Strengths: \_\_\_\_\_  
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Needs improvement: \_\_\_\_\_  
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## 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 23)

**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 24)

**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)

**Current Portion** - (defined on page 19)

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

**Debt to Asset Ratios** - (defined on page 21)

**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 24.

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

**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.

**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.

**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 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 29)

**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 \$1,550 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; bST, 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 29)

**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 19)

**Return on Total Capital** - (defined on page 19)

**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 29)

**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 \$1,550 per month plus the value of operator(s) labor at \$1,550 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.

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**OTHER A.R.M.E. EXTENSION BULLETINS**

<u>EB No</u>	<u>Title</u>	<u>Author(s)</u>
98-13	Dairy Farm Business Summary, Eastern New York Renter Summary, 1997	Knoblauch, W.A. and L.D. Putnam
98-12	Dairy Farm Business Summary, Central Valleys Region, 1997	LaDue, E.L., S.F. Smith, W.A. Knoblauch, D. Bowne, Z. Kurdieh, C. Mentis, C.Z. Radick and L.D. Putnam
98-11	Dairy Farm Business Summary, Northern New York Region, 1997	Milligan, R.A., L.D. Putnam, G. Yarnall, P. Beyer, A. Deming and W. Van Loo
98-10	Dairy Farm Business Summary, Southeastern New York Region, 1997	Knoblauch, W.A., L.D. Putnam, S.E. Hadcock, L.R. Hulle, M. Kiraly and J.J. Walsh
98-09	Dairy Farm Business Summary, Western and Central Plateau Region, 1997	Knoblauch, W.A., L.D. Putnam, C.A. Crispell, J.W. Grace, J.S. Petzen, A.N. Dufresne and G. Albrecht
98-08	Dairy Farm Business Summary, Northern Hudson Region, 1997	Conneman, G.J., L.D. Putnam, C.S. Wickswat, S. Buxton and D.R. Wood
98-07	Dairy Farm Business Summary, Western and Central Plain Region, 1997	Knoblauch, W.A., L.D. Putnam, J. Karszes, C. Mentis, G. Allhusen and J. Hanchar
98-06	Dairy Farm Business Summary, New York Large Herd Farms, 300 Cows or Larger, 1997	Karszes, J., K.A. Knoblauch and L.D. Putnam
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