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DAIRY FARM BUSINESS SUMMARY

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INTENSIVE GRAZING FARMS NEW YORK 1998

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Intensive Grazing Farms
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1998 DAIRY FARM BUSINESS SUMMARY INTENSIVE GRAZING FARMS

INTRODUCTION

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

The farms included in the study are a subset of New York State farms participating in the Dairy Farm Business Summary (DFBS). Sixty-six 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 66 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 59 remaining farms, surveys were obtained from 31. The investigators had special interest in practices used on farms with above average profitability. Therefore the study centered on 31 farms which were not first year grazers and on which at least 40 percent of forage consumed during the grazing season was grazed. These 31 farms were divided on the basis of net farm income (without appreciation) per cow above and below \$750 which was about 20 percent higher than the average for all farms participating in DFBS. Seventeen farms with net farm income per cow above \$750 are in the "More Profitable" group and fourteen farms with net farm income per cow below \$750 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 1997 and 1998 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 1998 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 measuring performance and establishing goals for your business. It is equally important for you to determine the progress your business has made over the past two or three years, to compare this progress to your goals, and to set goals for the futures. Please refer to the table on page 3 for selected factors from 29 farms that were grazing in both 1997 and 1998 and participated in the DFBS project for both years.

These 29 farms changed very little in size from 1997 to 1998. Average herd size increased by one cow to an average of 72, average number of heifers increased by one to 53, and tillable and nontillable pasture increased by 4.2%. While the farm size factors increased slightly, worker equivalents working on the farm fell 3.7%.

Milk sold per cow increased 3.3% to 17,815 pounds. This increase in production plus the slight increase in herd size led to a 4.5% increase in the total milk production off the farm. The increase in milk sold per cow is due in part to the generally better growing conditions experienced in 1998. This change in growing seasons is reflected in an increase in hay yields of 9.1% and in corn yields of 10%.

The decrease in the number of worker equivalents used on the farm coupled with the slight increase in herd size led to a 6.9% increase in cows per worker, to 31. The increase in cows per worker and the increase in milk sold per cow led to an 8.6% increase in milk sold per worker equivalent.

With the better growing season and the decrease in feed prices during the year, feed costs per hundredweight fell 3.2% to \$3.65 per cwt. This decrease in feed costs coupled with the increase in milk price led to a 17.9% decrease in the grain and concentrates purchased as a percent of milk sales. Total farm operating cost per cwt. of milk sold increased 1.9% but the operating costs to produce milk decreased 8.9% and the total costs of producing milk fell 5.2%.

Gross milk price increased 16.9% to \$15.57 per cwt. And net milk price increased 17.9% to \$15.06 per cwt. Gross milk sales per cow increased 20.5%, dairy cattle sales per cow increased 42.6%, and calf sales per cow were unchanged.

With the large increase in income generated from the increase in production and milk price, profitability rose significantly over last year. Net farm income without appreciation increased 185% to \$62,845. Labor and management income per operator rose from \$145 per operator in 1997 to \$31,929 per operator in 1998. Rate of return on equity capital without appreciation increased 101% to 7.3%, and rate of return on all capital without appreciation increased 114% to 7.4%.

The change in net worth on these farms reflects the increase in profitability that occurred in 1998, with the end of year net worth increasing by 12.3% to \$373,513. Debt per cow fell 6.9% to \$1,917 per cow, and the debt to asset ratio fell 12.9% to 0.27.

PROGRESS OF THE FARM BUSINESS

Same 29 Grazing Dairy Farms, 1997 & 1998

Selected Factors	Average of 29 Farms		Percent Change
	1997	1998	
<u>Size of Business</u>			
Average number of cows	71	72	1.4%
Average number of heifers	52	53	1.9%
Milk sold, lbs.	1,220,085	1,275,332	4.5%
Worker equivalent	2.41	2.32	-3.7%
Total nontillable pasture & tillable acres	265	276	4.2%
<u>Rates of Production</u>			
Milk sold per cow, lbs.	17,243	17,815	3.3%
Hay DM per acre, tons	2.2	2.4	9.1%
Corn silage per acre, tons	14.0	15.4	10.0%
<u>Labor Efficiency & Costs</u>			
Cows per worker	29	31	6.9%
Milk sold/worker, lbs.	506,259	549,712	8.6%
Hired labor cost/cwt.	\$1.17	\$1.10	-6.0%
Hired labor cost/worker	\$19,899	\$19,184	-3.6%
Hired labor cost as % of milk sales	8.8%	7.1%	-19.3%
<u>Cost Control</u>			
Grain & conc. purchased as % of milk sales	28%	23%	-17.9%
Grain & conc. per cwt. milk	\$3.77	\$3.65	-3.2%
Dairy feed & crop expense per cwt. milk	\$4.91	\$4.81	-2.0%
Labor & mach. costs/cow	\$1,083	\$1,097	1.3%
Total farm operating costs per cwt. sold	\$12.10	\$12.33	1.9%
Interest costs per cwt. milk	\$0.88	\$0.84	-4.5%
Milk marketing costs per cwt. milk sold	\$0.55	\$0.50	-9.1%
Operating cost of producing cwt. of milk	\$10.49	\$9.56	-8.9%
Total costs of producing cwt. of milk	\$15.75	\$14.93	-5.2%
<u>Capital Efficiency</u> (average for the year)			
Farm capital per cow	\$6,695	\$6,856	2.4%
Mach. & equip. per cow	\$1,178	\$1,200	1.9%
Asset turnover ratio	0.40	0.49	22.5%
<u>Income Generation</u>			
Gross milk sales per cow	\$2,288	\$2,757	20.5%
Gross milk sales per cwt.	\$13.32	\$15.57	16.9%
Net milk sales per cwt.	\$12.77	\$15.06	17.9%
Dairy cattle sales per cow	\$148	\$211	42.6%
Dairy calf sales per cow	\$21	\$21	0.0%
<u>Profitability</u>			
Net farm income w/o apprec.	\$22,019	\$62,845	185.4%
Net farm income w/apprec.	\$26,334	\$71,290	170.7%
Labor & mgt. income per oper./manager	\$145	\$31,929	21,920.0%
Rate of return on equity capital w/o apprec.	-4.0%	7.3%	101.8%
Rate of return on all capital w/o apprec.	-0.5%	7.4%	114.8%
<u>Financial Summary</u>			
Farm net worth, end year	\$332,467	\$373,513	12.3%
Debt to asset ratio	0.31	0.27	-12.9%
Farm debt per cow	\$2,060	\$1,917	-6.9%

INTENSIVE GRAZING SURVEY SUMMARY

From the survey data of the 31 selected grazing farms, analysis of average production levels and profitability measures are shown as follows:

SELECTED PRODUCTION AND PROFITABILITY MEASURES Intensive Grazing Dairy Farms, 1998

	17 More Profitable Dairy Farms	14 Less Profitable Dairy Farms
Pounds milk sold per cow	18,508	17,163
Net farm income/cow without appreciation	\$1,104	\$412
Operating cost of producing milk per cwt.	\$8.75	\$11.68

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, 1998

	17 More Profitable Dairy Farms	14 Less Profitable Dairy Farms
Average cows	80	78
Percent farms supplementing with grain	82%	93%
Average supplement grain, lbs.	15.92	12.92
Percent farms supplementing with forage	65%	64%
Average forage supplement, lbs.	9	12.66
Average percent forage from pasture	69%	70%
Percent rotated after each milking	53%	21%
Percent rotated one time a day	41%	43%
Percent rotated every other day	6%	14%
Percent rotated every third day	----	14%
Other rotation	----	8%
Average times equivalent pasture clipped	1.33	1.15
Average length grazing (days) season	203	153
Percent farms applied fertilizer	53	28.5
Pounds used per acre on the farms	206	54.6
Percent farms weed problems	29%	58%
Percent farms water every paddock	71%	42
Percent farms water every laneway	18%	42
Percent farms water, other	11%	16
Average distance to water, feet	279	398
Percent farms reseeded pasture during last 10 years	65%	16%
Percent of pasture that has been reseeded	40%	39%
Percent farms where pasture has machine harvested	88%	75%
Percent of the pasture that was harvested by machine	49%	40%
Most common pasture species:		
First	orchard grass	orchard grass
Second	native grass mix	native grass mix, ladino clover
Third	native clover	timothy
Cull rate	25.5%	20.2%

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.

WATER AVAILABILITY
Intensive Grazing Farms, 1998

	17 More Profitable Dairy Farms		14 Less Profitable Dairy Farms	
	Water in Every Paddock?		Water in Every Paddock?	
	Yes (12)*	No (5)	Yes (5)	No (8)
Pounds milk sold per cow	18,667	18,470	16,100	16,321
Net farm income per cow without appreciation	\$1,097	\$993	\$432	\$397
Operating cost of producing milk per cwt.	\$8.93	\$8.97	\$11.67	\$11.14
Distance to water (feet)	250	350	256	338
Percent forage from pasture	70%	66%	56%	80%

*Number of responses to survey question.

Supplemental Feeding

The table below shows that farms feeding supplement produced more milk per cow in both the high and low profit groups. However, other factors influence the profitability, such as cost of feed. The table below compares milk production and net farm income on farms feeding corn silage and other forages. This demonstrates the importance of sufficient, high quality supplemental forage. 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, 1998

	17 More Profitable Dairy Farms		14 Less Profitable Dairy Farms	
	Fed Any Forage (11)**	Fed No Forage (6)	Fed Any Forage (9)	Fed No Forage (5)
Percent forage from pasture	61%	83%	56%	96%
Pounds milk sold per cow	19,731	16,553	17,086	15,253
Net farm income per cow without appreciation	\$1,076	\$1,049	\$450	\$329
Pounds grain fed per cow per day	14.3	7.6	12.8	10.6
Pounds of corn silage	6.2	0	7.3	0
Pounds of other*	7.6	0	4.8	0

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

**Number of responses to survey question.

Ration Details

Of the 17 more profitable farms in the summary, fourteen reported supplementing with grain during the grazing season at an average rate of 15.9 pounds per animal per day. Seven farms fed corn silage at 9.7 pounds per cow per day. One farm reported feeding baleage, eight farms reported feeding dry hay, and two farms fed other forage.

Of the 14 less profitable farms in the summary, thirteen reported supplementing with grain during the grazing season at an average rate of 12.92 pounds per animal per day. Eight farms fed corn silage at 8.25 lbs per day. One farm reported feeding baleage, four fed dry hay, and two fed other silage.

Frequency of Rotation

In the more profitable group of graziers, nine farmers rotated cows into a fresh paddock after each milking, seven farmers provided new pasture once per day and one farm reported “other”. In the less profitable group of graziers, three farmers rotated cows into fresh paddock after each milking, six provided new pasture once per day, and five noted “other”. The table below compares the rotation of cows on new pasture after each milking to milk production and net farm income.

**ROTATION FREQUENCY
Intensive Grazing Farms, 1998**

	19 More Profitable Dairy Farms		16 Less Profitable Dairy Farms	
	Rotation		Rotation	
	After Each Milking (9)	Other (8)	After Each Milking (3)	Other (11)
Pounds milk sold per cow	19,989	17,057	16,009	16,547
Net farm income per cow w/o appreciation	1,146	977	329	428

Intensive Grazing Satisfaction Comments

- “We are very excited to be on pasture and like all the management possibilities it allows.”
- “Feeding cows proper amount in barn to supplement pasture during slower growing time.”
- “Less labor.”
- “We really enjoy MIG(Management Intensive Grazing); we look forward to each grazing season. Our cows are happier and so are we when they are out grazing.”
- “Need more time to move cows.”
- “Cows are healthier than when housed for the winter.”
- “The only way to farm.”

Lifestyle Satisfaction Comments

- “Need for relief milking.”
- “Needs more fishing time.”
- “Although we enjoy grazing and dairying in general, our current barn set-up is difficult to work in especially during the winter when the cows are inside.”
- “We need more money and less work.”
- “Too busy.”
- “Need more time with family.”
- “With more and more cows, it is harder to manage pasture and all other work.”
- “More time for family and myself.”
- If not doing crops, probably more manageable.”

INTENSIVE GRAZING FARMS VS. NON-GRAZING FARMS
New York State Dairy Farms, 1998

Item	All Intensive Grazing Farms	Non-Grazing Farms*	Profitable Grazing Farms**	Profitable Non- Grazing Farms***
Number of farms	59	110	17	40
<u>Business Size & Production</u>				
Number of cows	83	79	80	77
Number of heifers	62	60	62	58
Milk sold, lbs.	1,465,226	1,426,679	1,487,206	1,551,333
Milk sold/cow, lbs.	17,653	18,132	18,508	20,115
Milk plant test, % butterfat	3.71%	3.70%	3.64%	3.67%
Tillable acres, total	247	253	241	230
Hay crop, tons DM/acre	2.4	2.4	2.6	2.8
Corn silage, tons/acre	14.8	15.1	16.6	15.3
Forage DM/cow, tons	6.4	8.8	6.0	8.7
<u>Labor & Capital Efficiency</u>				
Worker equivalent	2.75	2.67	2.46	2.77
Milk sold/worker, lbs.	532,809	534,337	604,555	560,048
Cows/worker	30	30	33	28
Farm capital/worker	\$194,307	\$226,250	\$227,625	\$200,849
Farm capital/cow	\$6,438	\$7,647	\$6,999	\$7,225
Farm capital/cwt. milk	\$36	\$42	\$38	\$36
<u>Milk Production Costs & Returns</u>				
Selected costs/cwt.:				
Hired labor	\$1.39	\$1.06	\$1.22	\$0.79
Grain & concentrate	\$3.74	\$3.89	\$3.49	\$3.61
Purchased roughage	\$0.24	\$0.24	\$0.24	\$0.19
Replacements purchased	\$0.21	\$0.23	\$0.34	\$0.14
Vet & medicine	\$0.31	\$0.41	\$0.36	\$0.35
Milk marketing	\$0.55	\$0.70	\$0.46	\$0.68
Other dairy expenses	\$1.11	\$1.07	\$0.90	\$1.06
Operating cost/cwt.	\$10.53	\$11.26	\$8.75	\$9.17
Total labor cost/cwt.	\$3.64	\$3.48	\$3.30	\$3.35
Operator resources/cwt.	\$3.32	\$3.48	\$3.67	\$3.50
Total cost/cwt.	\$15.35	\$16.44	\$13.79	\$14.42
Average farm price/cwt.	\$15.57	\$15.69	\$15.73	\$15.65
Return over total costs/cwt.	\$0.22	\$-0.75	\$1.94	\$1.23
<u>Related Cost Factors</u>				
Hired labor/cow	\$245	\$192	\$227	\$160
Total labor/cow	\$642	\$629	\$613	\$675
Purchased dairy feed/cow	\$702	\$745	\$694	\$765
Purchased grain & concentrate as % of milk receipts	24%	25%	22%	23%
Vet & medicine/cow	\$55	\$75	\$68	\$70
Machinery costs/cow	\$448	\$529	\$490	\$559
Feed & crop exp./cwt.	\$4.81	\$5.10	\$4.64	\$4.72
<u>Profitability Analysis</u>				
Net farm income (without appreciation)	\$58,373	\$45,390	\$88,328	\$82,226
Net farm income per cow (w/o apprec.)	\$703	\$575	\$1,104	\$1,068
Labor & management income/operator	\$26,364	\$13,383	\$50,180	\$34,438
Rates of return on:				
Equity capital with appreciation	9.0%	5.2%	14.2%	11.7%
All capital with appreciation	8.5%	5.6%	12.3%	10.7%

*Farms with similar herd size, as the 59 rotational grazing farms.

**Farms with net farm income/cow without appreciation greater than \$750, had been grazing at least two years, and forage from pasture at least 40 per cent.

***Farms with similar herd size as the 17 profitable grazing farms and net farm income/cow without appreciation greater than \$750.

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.

Arnolds endeavor to maximize dry matter intake from quality pasture. Cows go to a fresh paddock after each milking. Heifers and dry cows often 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 a normal 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 uncomfortably hot 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 when they began producing milk organically. After a 90 day transition period, Twin Oaks began selling organic milk on May 1, 1998.

During May and early June of 1998, 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.

The Arnolds faced another feeding challenge during the summer of 1999 when normal May and June rains did not materialize. (They received just over 3 inches of rain during those two prime pasture growing months and that was coupled with windy, sunny, hotter than normal weather.) Grass and clover on hillside and gravel pastures went dormant and growth greatly slowed on the river flat paddocks. By early June, they began to question whether they would have enough pasture and by June 10th, they decided they would have to keep the milking cows in the barn days and only put them on pasture at night.

Even then, it looked like growth would not keep up with that diminished demand unless the pastures got some more water. The Arnolds decided to open their checkbook and pay for some “man made rain”. They hired the neighboring custom operators (who do much of their field and harvesting work) to pump water from the river that provides the boundary on one side of the farm onto about 50 acres of pasture. They used the set up they have for applying manure with a draghose. At the lowest speed the tractor could go, they were able to apply a little over an inch on each pass. It cost just under \$50 per acre to have that inch plus applied. That water brought those pastures on enough to allow grazing at night until early July when Mother Nature again provided cheaper water.

Although \$50 per acre sounds like a very high price to pay to get some grass to grow, they believe that it paid. On the same amount of acreage and over the same time period, the cows were able to get six grazings off a pasture that was irrigated and only one grazing off a similar pasture that saw no supplemental water. Each grazed acre saved approximately 25 cows worth of TMR so TMR savings from having those grazings more than paid for the \$50 cost per acre. In addition, it allowed the cows to continue grazing and not have to be back in the barn all the time. On July 6th, they were able to go back to day and night grazing with the milking herd.

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.

Willow Creek Farm

Chuck and Julia Deichmann of Belmont, Alleghany County, returned to Chuck’s father’s farm in 1992. Prior to that, he received a degree in auto mechanics, then worked in construction and on the family farm. From 1989-91 he studied aviation maintenance in Florida. He and Julia were married in 1990 and they decided that the farm was where they wanted to raise their family. In the spring of 1992, a partnership was formed with Charlie’s father. In 1995 he retired and Chuck and Julia, with a loan from Farm Credit, purchased the land, cattle and machinery.

The farm discontinued growing corn in 1989 due to problems with yields on their soil types and a short growing season and since then has been a grass farm. No fertilizer is applied to the fields, only some lime and manure during the winter. Yields are consistently over two tons of hay per acre. Thought is being given to become certified as an organic farm. Some reseeding needs to be done and a decision will be made at that time.

In 1990, rotational grazing was implemented but with large paddocks where the cattle grazed for several days before being moved. Each year the size was reduced until now they are sized for one days feed requirement. A laneway and a water system were installed over the years. The water system serves the paddocks near the barn but will be expanded to reach more in the future. As on most farms, the fencing could be improved and there are plans to do so.

At present there are 40 acres of rotational pasture and the regrowth from hay fields when needed later in the summer. Cows are turned out in mid May and normally have pasture until October. Chuck wants some hay in the cows’ ration to improve fat test when on pasture and plans to feed eight to ten pounds per day per cow.

The pastures consist of orchardgrass, timothy, white clover and red clover. Frost seeding is done on a limited basis. Plans call for the fields that are reseeded to be reseeded to red clover and timothy. This will allow for higher quality hay to be harvested than at present. In an effort to increase hay quality and because labor to handle small bales is difficult to find, a round baler and bale wrapper were purchased this year. Some small bales will continue to be made, as there is a need for them on the farm.

Until more land can be brought into production, some heifers are contracted out for the summer on rotational pasture. Due to a drought this year, they may be boarded at that farm for the winter.

At the time of purchase there were 30 cows on the farm shipping just under 14,000 lbs. per cow. Since then numbers have expanded to 43 cows in 1998 and 52 in 1999. The herd now consists of eight Jerseys with the remainder Holsteins. Pounds shipped were 16,000 lbs. per cow last year. The growth has come from within as no animals have been purchased. There is no intent to get larger. The goal is to actually decrease numbers but increase production per cow. With Multiple Component Pricing coming, the Jerseys will be kept. Chuck also comments that the Jerseys are better grazers. On hot days they will return to pasture and the Holsteins will eventually follow.

While Chuck has been increasing production, the percent of milk sales going for feed has decreased from 37% to 23%. This year his operating cost per cwt. is \$8.12, over two dollars less than the average rotational grazer's cost. This allows his net farm income per cow to be above the average.

Debt per cow has been reduced and net worth doubled in the five years he has operated the farm. At the same time he has made many improvements in the buildings and machinery. He has built a storage barn and remodeled and expanded the dairy barn, building some larger tie stalls for the Holsteins and enlarging the heifer area.

Chuck emphasizes that this is a family farm. Very little outside labor is hired. Julia is a mother, wife, and school teacher but summer finds her on the tractor assisting with the field work. He credits her support with the farm being a profitable business.

He utilizes the Dairy Farm Business Summary (DFBS) to compare his farm with others and track performance over the years. Cost control is important to him as his operating cost indicates, but not at the expense of lower profitability. He realizes that lower cost per cwt. can also be achieved by increasing production.

They have set goals for the farm to achieve over the next few years and at the same time have set some family goals to achieve.

Pastureland Dairy

Pastureland Dairy, located in Onondaga County, is owned and operated by Peter Mapstone and his family. The transition to rotational grazing began in 1987 when Pete returned home from college. At Cornell, Pete chose to do a business analysis of the family farm as a class project. He discovered that purchased grain and concentrate accounted for approximately 50 percent of milk sales. Pete realized that a change was necessary to improve profitability. One potential change that Pete considered was a major expansion, but projections indicated that a large expansion would not generate enough cash to meet cash commitments. Making a transition to rotational grazing appeared to offer an opportunity to generate more profits, while maximizing available resources.

Milk production did not decline when the Mapstones adopted rotational grazing. The farm presently sells 20,240 pounds per cow. Moreover, the operating cost per hundredweight of producing milk declined significantly. Pastureland Dairy incurs operating expenses of \$8.34 per hundredweight. During the summer, ration costs are \$2.36 per hundredweight; in the winter, ration costs total \$4.39 per hundredweight. Purchased grain and concentrate is now down to 19 percent of milk sales. Even though the herd has grown by 50 percent since 1987 to 150 cows, total purchased feed costs are the same now as they were twelve years ago.

Change to Grazing

The transition to rotational grazing began by fully utilizing all existing pastures. Instead of pumping water uphill to paddocks, the Mapstones dug a pond to supply water via gravity. Cost control is a key factor to achieving above average profitability at Pastureland Dairy. For over five years, a used \$50 three wheeler was utilized to move cattle. Two years ago, the farm purchased a used four wheeler. The Mapstones reduced cropping costs by growing less corn; they now grow 100 acres of corn, down from 200 acres.

Making a change to grazing has produced results that transcend economic benchmark information. Pastureland Dairy has experienced improvements in overall herd health. For example, there are fewer DAs and retained placentas. A culling rate of 16 percent is responsible for an increase in herd size of 50 percent since 1987.

Business and Operational Changes

In 1991, Pete purchased the herd from his father, Robert. That year, Robert and Pete also agreed to a rental arrangement to allow for equipment and facilities leases. Pete is gradually acquiring equity in equipment by paying for new machinery when it is replaced. Last year, he purchased a neighboring farm to allow for expanded grazing. Heifers were moved from the main farm onto the recently purchased farm this spring, after the Mapstones constructed new fences around pastures. This allowed for enlarging heifer stalls on the main farm to accommodate cows and expand the milking herd from within. Continual expansion necessitated replacing the bulk tank with a larger model last spring.

Increased cow numbers brought about the need to improve milking efficiency. An eight-stall flat barn parlor was an economical alternative to constructing a milking parlor. Milkers are able to achieve a through-put rate of 60 cows per hour by utilizing this setup.

A major cropping change in 1996 was replacing alfalfa hay crop silage with grass hay crop silage. This provides a smoother transition from confinement feeding in the winter to pasture-based feeding in the grazing season. In dry years, supplemental feeding of hay crop silage is necessary to provide for nutrient requirements.

Looking Toward the Future

One goal Pete cited was acquiring more land to allow for a constantly increasing herd. He hopes to expand cow numbers in the future to maximize the farm's grazing capacity, which would be approximately 200 cows. Also under consideration are constructing a greenhouse facility to house calves. If this is successful, such housing may be constructed for heifers and dry cows.

There are numerous reasons why Pastureland Dairy has succeeded in utilizing rotational grazing. However, Pete gives much of the credit to his father Robert, who has provided excellent management advice, as well as labor. A benchmark that illustrates Pastureland Dairy's success as a business is a rate of return on all capital of 22.1 percent.

SUMMARY OF GRAZING FARMS WITH OVER 100 COWS

There were ten farms with more than 100 cows that indicated on the 1998 Dairy Farm Business Summary that they were grazers. Surveys were collected from five of these ten large grazing farms. The table on the following page compares these five grazing farms with 59 non-grazing farms of similar size and location.

Grazing Practices Information Collected from the Surveys Follows:

- These farms received an average of 70 percent of the forage in the ration from grazing.
- The average length of the grazing season was 210 days.
- Three out of the five farms provided water in every paddock. The remaining two had water available in the laneway.
- Four out of the five farms provided new pasture after each milking, while one farm provided new pasture every other day.
- Three out of the five farms supplemented pasture forage with corn silage. Along with the corn silage they provided some "other" type of forage.
- None of these farms indicated to have fed baleage.
- Four out of the five farms reseeded an average of 58 percent of pasture acreage in the past 10 years.
- The five farms mechanically harvested an average of 42 percent of pasture which was also grazed.
- The most common pasture species were orchard grass, ladino clover, and native grass mix.
- Two out of the five farms applied an average of 520 lbs. of fertilizer per acre.

Four out of the five farms rated their level of satisfaction with intensive grazing at the highest or second highest level. One did not complete this section of the survey.

**INTENSIVE GRAZING FARMS WITH MORE THAN 100 COWS
VS. NON-GRAZING FARMS OF SIMILAR SIZE, 1998**

Item	Grazing Farms >100 Cows	Non-Grazing Farms
Number of farms	5	59
<u>Business Size & Production</u>		
Number of cows	217	218
Number of heifers	170	132
Milk sold, lbs.	3,860,975	4,387,341
Milk sold/cow, lbs.	17,809	20,130
Milk plant test, % butterfat	3.73%	3.69%
Tillable acres, total	510	510
Hay crop, tons DM/acre	3.3	3.2
Corn silage, tons/acre	16.5	17.5
Forage DM/cow, tons	5.6	8.5
<u>Labor & Capital Efficiency</u>		
Worker equivalent	4.91	5.36
Milk sold/worker, lbs.	786,349	818,534
Cows/worker	44	41
Farm capital/worker	\$261,468	\$247,549
Farm capital/cow	\$5,916	\$6,087
Farm capital/cwt. milk	\$33	\$30
<u>Milk Production Costs & Returns</u>		
Selected costs/cwt.:		
Hired labor	\$2.00	\$1.83
Grain & concentrate	3.42	3.96
Purchased roughage	0.10	0.23
Replacements purchased	0.38	0.46
Vet & medicine	0.33	0.46
Milk marketing	0.30	0.54
Other dairy expenses	1.20	1.22
Operating cost/cwt.	10.00	11.62
Operator resources/cwt.	2.10	2.54
Total labor cost/cwt.	2.74	2.69
Total cost/cwt.	13.31	14.65
Average farm price/cwt.	15.51	15.63
Return over total costs/cwt.	2.20	0.98
<u>Related Cost Factors</u>		
Hired labor/cow	\$355	\$369
Total labor/cow	487	542
Purchased dairy feed/cow	626	843
Purchased grain & concentrate as % of milk receipts	22%	25%
Vet & medicine/cow	\$59	\$92
Machinery costs/cow	\$443	\$457
Feed & crop exp./cwt.	\$4.51	\$5.00
<u>Profitability Analysis</u>		
Net farm income (without appreciation)	\$170,388	\$127,724
Net farm income/cow (without appreciation)	\$785	\$586
Labor & management income/operator	\$103,426	\$57,800
Rates of return on:		
Equity capital with appreciation	17.7%	15.7%
All capital with appreciation	14.7%	11.7%

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
59 Intensive Grazing Dairy Farms, 1998

Type of Farm	Number	Milking System	Number
Dairy	59	Bucket & carry	0
Part-time dairy	0	Dumping station	3
Dairy cash-crop	0	Pipeline	45
		Herringbone parlor	7
		Other parlor	4
Type of Ownership	Number	Production Records	Number
Owner	59	DHIC	35
Renter	0	Owner-Sampler	9
		Other	8
Type of Business	Number	None	7
Sole Proprietorship	50	bST Usage	Number
Partnership	8	Used on <25% of herd	4
Corporation	1	Used on 25-75% of herd	10
Type of Barn	Number	Used on >75% of herd	4
Stanchion or Tie-Stall	43	Stopped using in 1998	1
Freestall	10	Not used in 1998	40
Combination	6	Business Record System	Number
Milking Frequency	Number	Account Book	27
2 times per day	56	AgriFax (mail-in only)	3
3 times per day	1	On-farm computer	26
Other	2	Other	3

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 1998.

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

CASH AND ACCRUAL FARM EXPENSES
59 Intensive Grazing Dairy Farms, 1998

Expense Item	Cash Paid	-	Change in Inventory or Prepaid Expense	+	Change in Accounts Payable	=	Accrual Expenses
<u>Hired Labor</u>	\$ 20,637		\$ -1	<<	\$ -275		\$ 20,363
<u>Feed</u>							
Dairy grain & concentrate	59,571		2,044		-2,765		54,763
Dairy roughage	3,726		116		-77		3,533
Nondairy	57		3		0		55
<u>Machinery</u>							
Machinery hire, rent & lease	4,248		275	<<	-33		3,941
Machinery repairs & farm vehicle exp.	14,503		95		-346		14,062
Fuel, oil & grease	4,569		54		-106		4,408
<u>Livestock</u>							
Replacement livestock	3,441		0	<<	-339		3,102
Breeding	3,062		114		4		2,952
Veterinary & medicine	4,853		44		-219		4,590
Milk marketing	8,079		0	<<	-1		8,079
Bedding	1,163		1		9		1,171
Milking supplies	7,029		61		-76		6,892
Cattle lease & rent	457		0	<<	0		457
Custom boarding	123		0	<<	0		123
bST expense	1,345		46		-132		1,168
Other livestock expense	3,461		4		21		3,478
<u>Crops</u>							
Fertilizer & lime	7,153		1,093		149		6,210
Seeds & plants	3,440		12		-54		3,375
Spray, other crop expense	2,755		77		-110		2,568
<u>Real Estate</u>							
Land, building & fence repair	4,572		26		-185		4,361
Taxes	6,410		49	<<	-252		6,109
Rent & lease	3,042		0	<<	-4		3,038
<u>Other</u>							
Insurance	4,042		0	<<	-14		4,028
Utilities (farm share)	6,267		0	<<	-148		6,119
Interest paid	13,733		0	<<	-88		13,646
Miscellaneous	2,997		22		-137		2,839
Total Operating	\$194,737		\$ 4,133		\$ -5,175		\$ 185,430
Expansion livestock	200		0	<<	0		200
Machinery depreciation							10,065
Building depreciation							5,405
TOTAL ACCRUAL EXPENSES							\$ 201,100

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 1998 but not paid for. A decrease is subtracted because it represents payment for resources used before 1998.

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
59 Intensive Grazing Dairy Farms, 1998

Receipt Item	Cash Receipts	+	Change in Inventory	+	Change in Accounts Receivable	=	Accrual Receipts
Milk sales	\$ 223,323				\$ 4,854		\$ 228,177
Dairy cattle	9,630		\$ 4,713		61		14,404
Dairy calves	1,715				0		1,715
Other livestock	1,098		312		40		1,450
Crops	1,053		4,211		43		5,307
Government receipts	4,060		3 *		51		4,114
Custom machine work	629				47		677
Gas tax refund	137				0		137
Other	<u>3,320</u>				<u>223</u>		3,543
Less nonfarm noncash capital**		(-)	<u>51</u> **			(-)	<u>51</u>
Total Receipts	\$ 244,966		\$ 9,188		\$ 5,318		\$ 259,473

*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 1998 for the 1999 crop year in excess of funds earned for 1998. Likewise, a decrease is added to cash government receipts because it represents funds earned for 1998 but received in 1997.

Changes in accounts receivable are calculated by subtracting beginning year balances from end year balances. Payments in January for milk produced in December 1998 compared to January 1998 payments for milk produced in 1997 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.

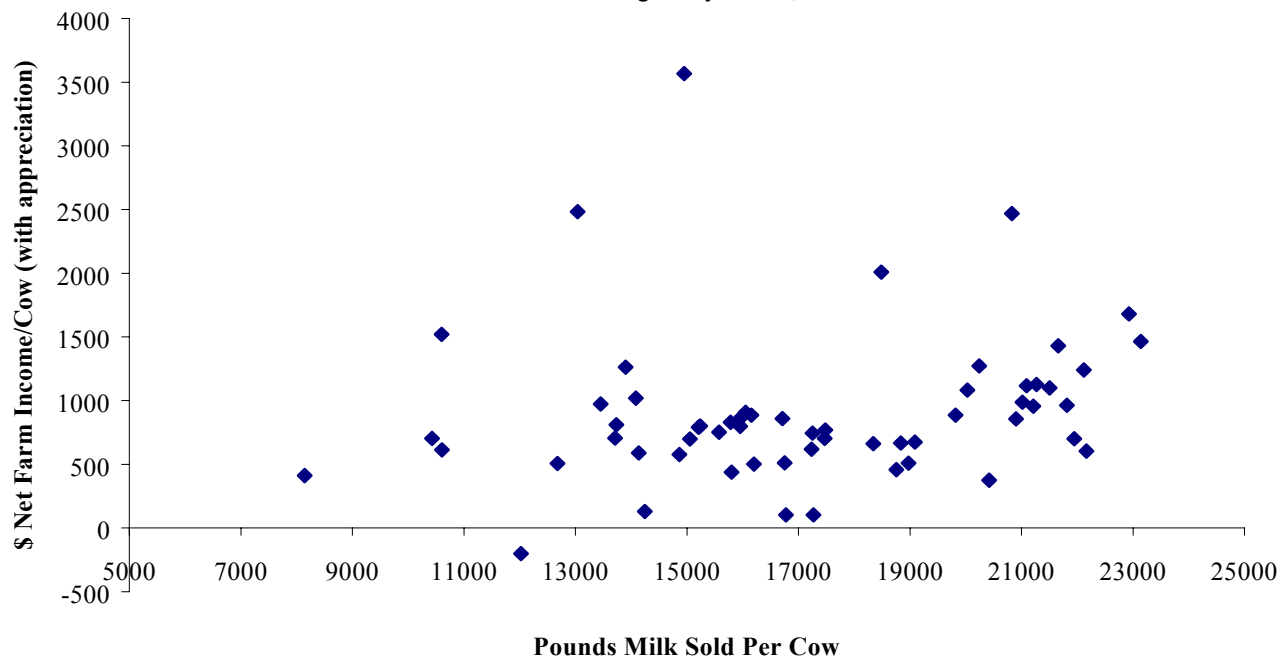
Net farm income is computed both with and without appreciation. Appreciation represents the change in values caused by annual changes in prices of livestock, machinery, real estate inventory, and stocks and certificates (other than Farm Credit). Appreciation is a major factor contributing to changes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

NET FARM INCOME
Intensive Grazing Dairy Farms, 1998

Item	59 Grazing Dairy Farms	17 More Profitable Farms	14 Less Profitable Farms
Total accrual receipts	\$ 259,473	\$ 282,485	\$ 218,070
Appreciation: Livestock	2,714	2,763	3,088
Machinery	2,120	2,776	1,746
Real Estate	5,744	2,192	6,352
Other Stock & Certificates	238	694	0
Total Including Appreciation	\$ 270,289	\$ 290,910	\$ 229,256
Total accrual expenses	- 201,100	- 194,157	- 185,929
Net Farm Income (with appreciation)	\$ 69,189	\$ 96,753	\$ 43,327
Net Farm Income Per Cow (with appreciation)	\$ 834	\$ 1,209	\$ 555
Net Farm Income (without appreciation)	\$ 58,373	\$ 88,328	\$ 32,141
Net Farm Income Per Cow (without appreciation)	\$ 703	\$ 1,104	\$ 412

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
59 Intensive Grazing Dairy Farms, 1998



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

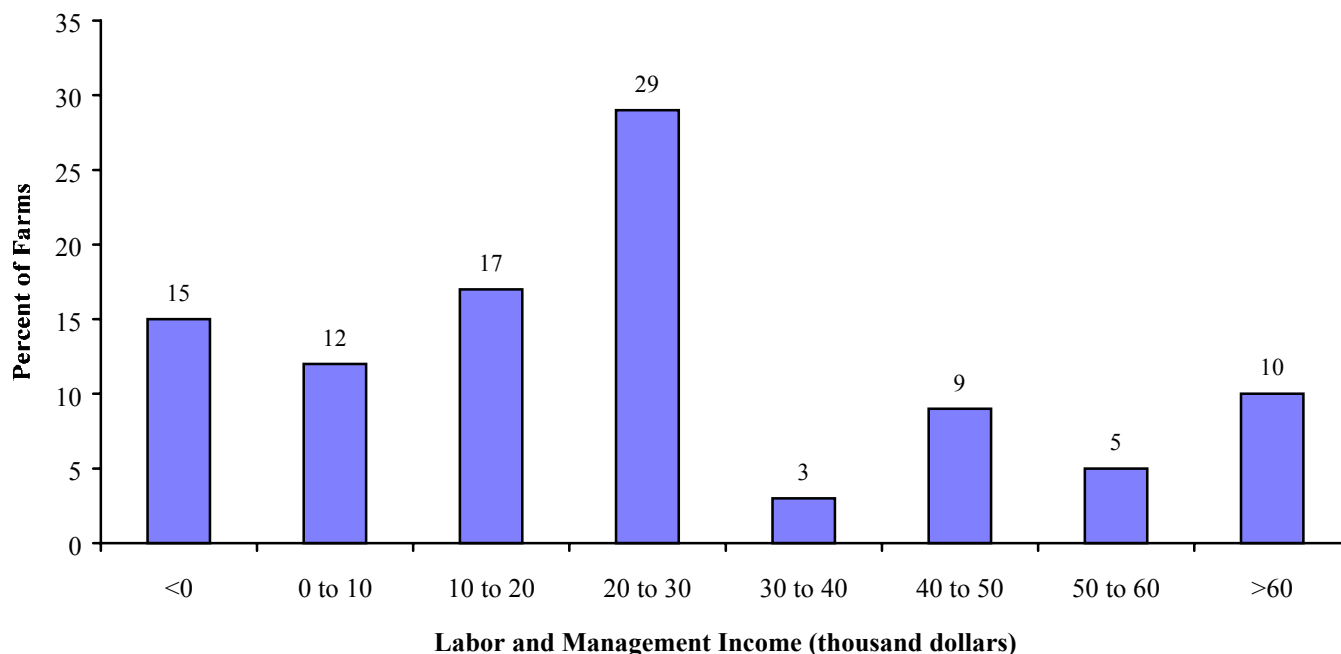
Intensive Grazing Dairy Farms, 1998

Item	59 Grazing Dairy Farms	17 More Profitable Farms	14 Less Profitable Farms
Net farm income without appreciation	\$ 58,373	\$ 88,328	\$ 32,141
Family labor unpaid @ \$1,600 per month	- 6,400	- 4,960	- 4,480
Interest on average equity capital @ 5% real rate	- 17,700	- 20,141	- 16,895
Labor & Management Income per farm	\$ 34,273	\$ 63,227	\$ 10,766
Labor & Management Income per Operator/Manager	\$ 26,364	\$ 50,180	\$ 9,047

Labor and management income per operator averaged \$26,364 on these 59 farms in 1998. The range in labor and management income per operator was from less than \$-50,000 to more than \$270,000. Returns to labor and management were less than \$20,000 on 44 percent of the farms. Labor and management income per operator was between \$20,000 and \$40,000 on 32 percent of the farms while 24 percent showed labor and management incomes of \$40,000 or more per operator.

DISTRIBUTION OF LABOR & MANAGEMENT INCOMES PER OPERATOR

59 Intensive Grazing Dairy Farms, 1998



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 \$10,000 - 30,000, and as you move away from this range 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 \$20,000 labor and management income per

operator. For the intensive grazing farms, 56% of the farms had returns that were over \$20,000, while for the 305 farms across the state, 62% had returns greater than \$20,000 in 1998.

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

RETURN ON EQUITY CAPITAL AND RETURN ON TOTAL CAPITAL

Intensive Grazing Dairy Farms, 1998

Item	59 Grazing Dairy Farms	17 More Profitable Farms	14 Less Profitable Farms
Net farm income with appreciation	\$ 69,189	\$ 96,753	\$ 43,327
Family labor unpaid @\$1,600 per month	- 6,400	- 4,960	- 4,480
Value of operators' labor & management	- 30,990	- 34,438	- 27,643
Return on equity capital with appreciation	\$ 31,799	\$ 57,355	\$ 11,204
Interest paid	+ 13,646	+ 11,752	+ 14,744
Return on total capital with appreciation	\$ 45,445	\$ 69,107	\$ 25,948
Return on equity capital without appreciation	\$ 20,983	\$ 48,930	\$ 18
Return on total capital without appreciation	\$ 34,629	\$ 60,682	\$ 14,762
Rate of return on average equity capital:			
with appreciation	9.0%	14.2%	3.3%
without appreciation	5.9%	12.2%	0.01%
Rate of return on average total capital:			
with appreciation	8.5%	12.3%	5.2%
without appreciation	6.5%	10.8%	3.0%

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 1998, lease payments were discounted by 8.75 percent to obtain their present value.

Advanced government receipts are included as current liabilities. Government payments received in 1998 that are for participation in the 1999 program are the end year balance and payments received in 1997 for participation in the 1998 program are the beginning year balance.

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

1998 FARM BUSINESS & NONFARM BALANCE SHEET
59 Intensive Grazing Dairy Farms, 1998

Farm Assets	Jan. 1	Dec. 31	Farm Liabilities & Net Worth	Jan. 1	Dec. 31
<u>Current</u>			<u>Current</u>		
Farm cash, checking & savings	\$ 5,845	\$ 8,784	Accounts payable	\$ 10,961	\$ 5,787
Accounts receivable	15,367	20,685	Operating debt	4,543	5,347
Prepaid expenses	24	346	Short Term	1885	2,119
Feed & supplies	33,338	41,359	Advanced govt. receipts	12	9
			Current Portion:		
			Intermediate	13,149	15,046
			Long Term	<u>3,720</u>	<u>3,972</u>
Total Current	\$ 54,574	\$ 71,174	Total Current	\$ 34,270	\$ 32,280
<u>Intermediate</u>			<u>Intermediate</u>		
Dairy cows:			Structured debt		
owned	\$ 81,164	\$ 86,624	1-10 years	\$ 60,865	\$ 61,073
leased	653	715	Financial lease		
Heifers	35,118	37,239	(cattle/machinery)	1,657	1,316
Bulls & other livestock	1,181	1,339	Farm Credit stock	<u>1,256</u>	<u>1,224</u>
Mach. & equip. owned	90,616	96,547	Total Intermediate	\$ 63,778	\$ 63,613
Mach. & equip. leased	1,004	601			
Farm Credit stock	1,256	1,224			
Other stock/certificate	<u>2,703</u>	<u>2,733</u>			
Total Intermediate	\$ 213,695	\$ 227,022			
<u>Long Term</u>			<u>Long Term</u>		
Land & buildings:			Structured debt		
owned	\$ 248,393	\$ 253,762	>10 years	\$ 87,343	\$ 79,345
leased	<u>67</u>	<u>0</u>	Financial lease		
Total Long Term	\$ 248,460	\$ 253,762	(structures)	<u>67</u>	<u>0</u>
			Total Long Term	\$ 87,410	\$ 79,345
Total Farm Assets	\$ 516,729	\$ 551,958	Total Farm Liab.	\$ 185,458	\$ 175,238
			FARM NET WORTH	\$ 331,271	\$ 376,720

Nonfarm Assets, Liabilities & Net Worth (Average of 46 farms reporting)

Assets	Jan. 1	Dec. 31	Liabilities & Net Worth	Jan. 1	Dec. 31
Personal cash, checking & savings	\$ 3,094	\$ 3,465	Nonfarm Liabilities	\$ 4,321	\$ 5,472
Cash value life insurance	6,108	6,575			
Nonfarm real estate	12,970	13,730			
Auto (personal share)	3,944	4,553			
Stocks & bonds	6,138	8,006			
Household furnishings	11,070	11,509			
All other nonfarm assets	<u>2,845</u>	<u>2,308</u>			
Total Nonfarm Assets	\$ 46,169	\$ 50,146	NONFARM NET WORTH	\$ 41,848	\$ 44,674

Farm & Nonfarm Assets, Liabilities, and Net Worth*	Jan. 1	Dec. 31
Total Assets	\$ 562,898	\$ 602,104
Total Liabilities	<u>189,779</u>	<u>180,710</u>
TOTAL FARM & NONFARM NET WORTH	\$ 373,119	\$ 421,394

*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, 1998

Item	59 Grazing Dairy Farms	17 More Profitable Farms	14 Less Profitable Farms
<u>Financial Ratios - Farm:</u>			
Percent equity	68%	74%	71%
Debt/asset ratio: total	0.32	0.26	0.29
long-term	0.31	0.24	0.29
intermediate/current	0.32	0.29	0.30
Current Ratio	2.20	2.18	1.90
Working Capital: \$38,894, As % of Expenses	19%	(\$41,456) 21%	(\$27,164) 15%
<u>Farm Debt Analysis:</u>			
Accounts payable as % of total debt	3%	2%	5%
Long-term liabilities as a % of total debt	45%	43%	45%
Current & inter. liabilities as a % of total debt	55%	57%	55%
<hr/>			
	59 Grazing Dairy Farms	17 More Profitable Farms	14 Less Profitable Farms
	Per Cow	Per Cow	Per Cow
	Per Tillable Acre Owned	Per Tillable Acre Owned	Per Tillable Acre Owned
<u>Farm Debt Levels:</u>			
Total farm debt	\$2,086	\$1,932	\$1,884
Long-term debt	945	822	846
Intermediate & long term	1,702	1,493	1,498
Intermediate & current debt	1,142	1,110	1,038

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
59 Intensive Grazing Dairy Farms, 1998

Item	Real Estate	Machinery & Equipment
Value beginning of year	\$ 248,393	\$ 90,616
Purchases	\$ 9,749*	\$ 14,220
Gift & inheritance	+ 661	+ 0
Lost capital	- 3,542	
Sales	- 1,838	- 344
Depreciation	- 5,405	- 10,065
Net investment	= - 375	= 3,811
Appreciation	+ 5,744	+ 2,120
Value end of year	\$ 253,762	\$ 96,547

*\$1,695 land and \$8,054 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, 1998

Item	59 Grazing Dairy Farms	17 More Profitable Farms	14 Less Profitable Farms
Beginning of year farm net worth	\$ 331,271	\$ 375,874	\$ 323,783
Net farm income w/o appreciation	\$ 58,373	\$ 88,328	\$ 32,141
+Nonfarm cash income	+ 7,902	+ 8,465	+ 10,295
-Personal withdrawals & family expenditures excluding nonfarm borrowings	- 31,880	- 44,050	- 23,014
RETAINED EARNINGS	+\$ 34,395	+\$ 52,743	+\$ 19,422
Nonfarm noncash transfers to farm	\$ 712	\$ 0	\$ 1,785
+Cash used in business from nonfarm capital	+ 4,127	+ 106	+ 1,285
-Note or mortgage from farm real estate sold (nonfarm)	- 0	- 0	- 0
CONTRIBUTED/ WITHDRAWN CAPITAL	+\$ 4,839	+\$ 106	+\$ 3,070
Appreciation	\$ 10,816	\$ 8,425	\$ 11,186
-Lost capital	- 3,542	- 6,236	- 5,139
CHANGE IN VALUATION EQUITY	+\$ 7,274	+\$ 2,189	+\$ 6,047
IMBALANCE/ERROR	- 1,059	- 1,128	- 302
End of year net worth*	=\$376,720	=\$429,784	=\$352,020
Change in net worth w/appreciation	\$ 45,449	\$ 53,910	\$ 28,237
<u>Change in Net Worth</u>			
Without appreciation	\$ 34,633	\$ 45,485	\$ 17,051
With appreciation	\$ 45,449	\$ 53,910	\$ 28,237

*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

59 Intensive Grazing Dairy Farms, 1998

Item		Average	
<u>Cash Flow from Operating Activities</u>			
Cash farm receipts	\$ 244,966		
- Cash farm expenses	<u>194,737</u>		
= Net cash farm income		\$ 50,229	
Personal withdrawals & family expenses including nonfarm debt payments	\$ 33,183		
- Nonfarm income	<u>7,902</u>		
- Net cash withdrawals from the farm		<u>\$ 25,281</u>	
= Net Provided by Operating Activities			\$ 24,948
<u>Cash Flow From Investing Activities</u>			
Sale of assets: machinery	\$ 344		
+ real estate	1,838		
+ other stock & cert.	<u>377</u>		
= Total asset sales		\$ 2,559	
Capital purchases: expansion livestock	\$ 200		
+ machinery	14,220		
+ real estate	9,749		
+ other stock & cert.	<u>169</u>		
- Total invested in farm assets		<u>\$ 24,338</u>	
= Net Provided by Investment Activities			\$ -21,779
<u>Cash Flow From Financing Activities</u>			
Money borrowed (intermediate & long term)	\$ 20,172		
+ Money borrowed (short term)	1,016		
+ Increase in operating debt	804		
+ Cash from nonfarm capital used in business	4,127		
+ Money borrowed - nonfarm	<u>1,303</u>		
= Cash inflow from financing		\$ 27,422	
Principal payments (intermediate & long term)	\$ 25,812		
+ Principal payments (short term)	782		
+ Decrease in operating debt	<u>0</u>		
- Cash outflow for financing		<u>\$ 26,594</u>	
= Net Provided by Financing Activities			\$ 828
<u>Cash Flow From Reserves</u>			
Beginning farm cash, checking & savings		\$ 5,845	
- Ending farm cash, checking & savings		<u>8,784</u>	
= Net Provided from Reserves			\$ -2,939
Imbalance (error)			\$ 1,058

Repayment Analysis

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

FARM DEBT PAYMENTS PLANNED Same Intensive Grazing Dairy Farms, 1997 & 1998

Debt Payments	Same 48 Grazing			Same 17 More Profitable Farms			Same 14 Less Profitable Farms		
	1998 Payments		Planned 1999	1998 Payments		Planned 1999	1998 Payments		Planned 1999
	Planned	Made		Planned	Made		Planned	Made	
Long term	\$ 10,486	\$ 10,839	\$ 9,573	\$ 11,330	\$ 12,975	\$ 10,661	\$ 7,110	\$ 6,980	\$ 6,815
Intermediate term	20,557	25,068	21,104	19,058	23,137	19,068	15,003	14,936	13,212
Short term	1,531	1,164	2,274	2,563	366	3,746	0	0	0
Operating (net reduction)	1,478	0	2,270	1,643	0	4,468	1,028	341	1,001
Accounts Pay. (net reduction)	<u>1,274</u>	<u>3,616</u>	<u>564</u>	<u>1,341</u>	<u>1,302</u>	<u>909</u>	<u>1,978</u>	<u>4,444</u>	<u>599</u>
Total	\$ 35,326	\$ 40,687	\$ 35,785	\$ 35,935	\$ 37,780	\$ 38,852	\$ 25,120	\$ 26,701	\$ 21,627
Per cow	\$ 442	\$ 509		\$ 449	\$ 472		\$ 426	\$ 453	
Per cwt. 1998 milk	\$ 2.47	\$ 2.85		\$ 2.42	\$ 2.54		\$ 2.63	\$ 2.79	
Percent of total 1998 farm receipts	14%	16%		13%	13%		16%	17%	
Percent of 1998 milk receipts	16%	18%		15%	16%		17%	18%	

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

COVERAGE RATIOS Same Intensive Grazing Dairy Farms, 1997 & 1998

Item	Average	Item	Average
Same 48 Grazing Dairy Farms, 1997 & 1998			
(A)=Amount Available for Debt Service	\$ 37,727	(A')=Repayment Capacity	\$ 59,157
(B)=Debt Payments Planned for 1998	\$ 35,326	(B)=Debt Payments Planned for 1998	\$ 35,326
(A/B)=Cash Flow Coverage Ratio for 1998	1.07	(A'/B)=Debt Coverage Ratio for 1998	1.67
Same 17 More Profitable Farms, 1997 & 1998			
(A)=Amount Available for Debt Service	\$ 49,308	(A')=Repayment Capacity	\$ 79,927
(B)=Debt Payments Planned for 1998	\$ 35,935	(B)=Debt Payments Planned for 1998	\$ 35,935
(A/B)=Cash Flow Coverage Ratio for 1998	1.37	(A'/B)=Debt Coverage Ratio for 1998	2.22
Same 14 Less Profitable Farms, 1997 & 1998			
(A)=Amount Available for Debt Service	\$ 25,703	(A')=Repayment Capacity	\$ 35,482
(B)=Debt Payments Planned for 1998	\$ 25,120	(B)=Debt Payments Planned for 1998	\$ 25,120
(A/B)=Cash Flow Coverage Ratio for 1998	1.02	(A'/B)=Debt Coverage Ratio for 1998	1.41

*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, 1998

Item	59 Grazing Dairy Farms		17 More Profitable Farms		14 Less Profitable Farms	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average no. of cows	83		80		78	
Total cwt. of milk sold		14,652		14,872		13,301
<u>Accrual Oper. Receipts</u>						
Milk	\$ 2,749	\$ 15.57	\$ 2,924	\$ 15.73	\$ 2,615	\$ 15.33
Dairy cattle	174	0.98	278	1.50	63	0.37
Dairy calves	21	0.12	22	0.12	23	0.13
Other livestock	17	0.10	41	0.22	19	0.11
Crops	64	0.36	127	0.68	-21	-0.12
Misc. Receipts	101	0.57	138	0.74	97	0.57
Total	\$ 3,126	\$ 17.71	\$ 3,531	\$ 18.99	\$ 2,796	\$ 16.40
<u>Accrual Operating Expenses</u>						
Hired labor	\$ 245	\$ 1.39	\$ 227	\$ 1.22	\$ 253	\$ 1.48
Dairy grain & concentrate	660	3.74	649	3.49	658	3.86
Dairy roughage	43	0.24	45	0.24	48	0.28
Nondairy feed	1	0.00	0	0.00	0	0.00
Mach. hire, rent & lease	47	0.27	49	0.26	64	0.37
Mach. repair & vehicle expense	169	0.96	196	1.06	165	0.97
Fuel, oil & grease	53	0.30	52	0.28	50	0.29
Replacement livestock	37	0.21	63	0.34	31	0.18
Breeding	36	0.20	36	0.19	37	0.22
Vet & medicine	55	0.31	68	0.36	43	0.25
Milk marketing	97	0.55	86	0.46	80	0.47
Bedding	14	0.08	12	0.06	17	0.10
Milking supplies	83	0.47	58	0.31	88	0.52
Cattle lease	6	0.03	0	0.00	16	0.09
Custom boarding	1	0.01	1	0.01	5	0.03
bST expense	14	0.08	3	0.02	12	0.07
Other livestock expense	42	0.24	58	0.31	44	0.26
Fertilizer & lime	75	0.42	86	0.46	74	0.43
Seeds & plants	41	0.23	41	0.22	17	0.10
Spray & other crop expense	31	0.18	43	0.23	26	0.15
Land, bldg., fence repair	53	0.30	52	0.28	42	0.25
Taxes	74	0.42	69	0.37	79	0.46
Real estate rent & lease	37	0.21	29	0.16	17	0.10
Insurance	49	0.27	50	0.27	41	0.24
Utilities	74	0.42	72	0.39	62	0.36
Miscellaneous	34	0.19	40	0.22	14	0.08
Total Less Interest Paid	\$ 2,070	\$ 11.72	\$ 2,084	\$ 11.21	\$ 1,983	\$ 11.63
<u>Net Accrual Operating Income</u>		<u>Total</u>		<u>Total</u>		<u>Total</u>
(without interest paid)	\$ 87,689		\$ 115,750		\$ 63,367	
- Change in livestock & crop invent.*	9,188		18,215		-5,589	
- Change in accounts receivable	5,318		3,881		7,418	
- Change in feed & supply inventory**	4133		7,460		572	
+ Change in accounts payable***	-5087		-1302		-10,592	
NET CASH FLOW	\$ 63,962		\$ 84,893		\$ 50,374	
- Net family withdrawals	- 23,978		- 35,583		- 12,719	
Available for Farm	\$ 39,984		\$ 49,308		\$ 37,655	
- Farm debt payments	- 44,848		- 37,779		- 46,468	
Available for Farm Investment	\$ -4,864		\$ 11,529		\$ -8,813	
- Capital purchases	\$ 24,338		\$ 31,887		\$ 13,870	
Additional Capital Needed	\$ 29,202		\$ 20,358		\$ 22,683	

*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, 1998

Item	59 Grazing Dairy Farms			17 More Profitable Farms			14 Less Profitable Farms		
<u>Land</u>	<u>Owned</u>	<u>Rented</u>	<u>Total</u>	<u>Owned</u>	<u>Rented</u>	<u>Total</u>	<u>Owned</u>	<u>Rented</u>	<u>Total</u>
Tillable	157	90	247	154	87	241	156	57	213
Nontillable	40	15	55	36	9	45	51	6	57
Other nontill.	96	6	102	106	15	121	104	0	104
Total	293	111	404	296	111	407	311	63	374
<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	56	133	2.4 tn DM	16	114	2.6 tn DM	12	120	2.2 tn DM
Corn silage	43	62	14.8 tn	10	59	16.8 tn	11	58	13.8 tn
			4.8 tn DM			5.2 tn DM			4.4 tn DM
Other forage	9	37	1.7 tn DM	3	42	2.2 tn DM	1	114	1.2 tn DM
Total forage	57	183	3.0 tn DM	16	159	3.2 tn DM	13	169	2.8 tn DM
Corn grain	16	61	119 bu	5	70	110 bu	4	22	116 bu
Oats	1	10	70 bu	0	0	0 bu	0	0	0 bu
Wheat	2	44	56 bu	0	0	0 bu	0	0	0 bu
Other crops	8	19		1	13		2	9	
Tillable pasture	45	58		14	72		11	61	
Idle	8	38		3	61		1	5	
Total Tillable Acres	59	247		17	241		14	213	

*This column represents the average acreage for the farms producing that crop. For the 59 New York dairy farms, average acreages including those farms not producing were hay crop 126, corn silage 45, corn grain 17, oats 0, wheat 1, tillable pasture 44, and idle 5.

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

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

CROP/DAIRY RATIOS

Intensive Grazing Dairy Farms, 1998

Item	59 Grazing Dairy Farms	17 More Profitable Farms	14 Less Profitable Farms
Total tillable acres per cow	2.98	3.01	2.72
Total forage acres per cow	2.13	1.86	2.01
Harvested forage dry matter, tons per cow	6.42	5.99	5.62

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, 1998

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	59	16				15		7
Ave. number of acres	247	55				135		34
Fert. & lime	\$ 25.14	\$ 45.45	\$ 9.17	\$ 0.37	\$ 11.34	\$ 4.99	\$ 38.62	\$ 10.85
Seeds & plants	13.66	27.55	5.56	0.23	8.63	3.79	7.94	2.23
Spray & other	10.40	36.35	7.33	0.30	3.21	1.41	3.18	0.89
TOTAL	\$ 49.20	\$ 109.35	\$ 22.06	\$ 0.90	\$ 23.18	\$ 10.19	\$ 49.74	\$ 13.97
<u>More Profitable Grazing Farms</u>								
No. of farms reporting	17	4				5		4
Ave. number of acres	241	48				127		25
Fert. & lime	\$ 28.40	\$ 22.00	\$ 5.62	\$ 0.25	\$ 4.20	\$ 1.90	\$ 59.20	\$ 14.51
Seeds & plants	13.54	25.82	6.59	0.29	10.83	4.90	16.24	3.98
Spray & other	14.34	25.12	6.41	0.29	7.03	3.18	7.60	1.86
TOTAL	\$ 56.28	\$ 72.94	\$ 18.62	\$ 0.83	\$ 22.06	\$ 9.98	\$ 83.04	\$ 20.35
<u>Less Profitable Grazing Farms</u>								
No. of farms reporting	14	5				5		3
Ave. number of acres	212	45				106		46
Fert. & lime	\$ 27.05	\$ 35.00	\$ 6.74	\$ 0.21	\$ 14.89	\$ 6.98	\$ 23.67	\$ 7.41
Seeds & plants	6.31	27.00	5.20	0.16	9.68	4.54	1.89	0.59
Spray & other	9.42	59.07	11.38	0.36	3.82	1.79	0.00	0.00
TOTAL	\$ 42.78	\$ 121.07	\$ 23.32	\$ 0.73	\$ 28.39	\$ 13.31	\$ 25.56	\$ 8.00

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, 1998

Machinery Expense	59 Grazing Dairy		17 More Profitable		14 Less Profitable	
	Total Expenses	Per Till. Acre	Total Expenses	Per Till. Acre	Total Expenses	Per Till. Acre
Fuel, oil & grease	\$ 4,408	\$ 17.85	\$ 4,144	\$ 17.20	\$ 3,870	\$ 18.25
Mach. repair & vehicle exp.	14,062	56.93	15,695	65.12	12,894	60.82
Machine hire, rent & lease	3,941	15.96	3,940	16.35	4,964	23.42
Interest (5%)	4,719	19.11	4,789	19.87	4,642	21.90
Depreciation	10,065	40.75	10,659	44.23	9,871	46.56
Total	\$ 37,195	\$ 150.59	\$ 39,227	\$ 162.77	\$ 36,241	\$ 170.95

Dairy Analysis

Analysis of the dairy enterprise can reveal strengths and weaknesses of the dairy farm business. Information on this page should be used in conjunction with DHI and other dairy production information. Changes in dairy herd size and market values that occur during the year are identified in the table below. The change in inventory value without appreciation is attributed to physical changes in herd size and quality. Any change in inventory is included as an accrual farm receipt when calculating all of the profitability measures on pages 16 and 17.

DAIRY HERD INVENTORY
Intensive Grazing Dairy Farms, 1998

	Dairy Cows		Heifer					
Item	No.	Value	Bred		Open		Calves	
			No.	Value	No.	Value	No.	Value
<u>59 Grazing Dairy Farms</u>								
Beg. year (owned)	82	\$ 81,164	21	\$ 18,476	22	\$ 11,603	18	\$ 5,039
+ Change w/o apprec.		3,373		2,006		-1,124		459
+ Appreciation		<u>2,087</u>		<u>421</u>		<u>274</u>		<u>84</u>
End year (owned)	83	\$ 86,624	24	\$ 20,903	20	\$ 10,753	20	\$ 5,582
End including leased	84							
Average number	83		62	(all age groups)				
<u>17 More Profitable Dairy Farms</u>								
Beg. year (owned)	79	\$ 82,685	22	\$ 20,216	25	\$ 12,145	15	\$ 3,981
+ Change w/o apprec.		4,136		6,638		-2,958		457
+ Appreciation		<u>2,032</u>		<u>563</u>		<u>226</u>		<u>119</u>
End year (owned)	80	\$ 88,853	29	\$ 27,417	18	\$ 9,413	16	\$ 4,557
End including leased	80							
Average number	80		62	(all age groups)				
<u>14 Less Profitable Dairy Farms</u>								
Beg. year (owned)	78	\$ 77,902	21	\$ 19,479	21	\$ 10,932	17	\$ 5,201
+ Change w/o apprec.		718		-2,268		-386		-687
+ Appreciation		<u>2,696</u>		<u>459</u>		<u>240</u>		<u>129</u>
End year (owned)	78	\$ 81,316	19	\$ 17,670	20	\$ 10,786	14	\$ 4,643
End including leased	78							
Average number	78		59	(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, 1998

Item	59 Grazing Dairy Farms	17 More Profitable Dairy Farms	14 Less Profitable Dairy Farms
Total milk sold, lbs.	1,465,226	1,487,206	1,330,121
Milk sold per cow, lbs.	17,653	18,508	17,163
Average milk plant test, percent butterfat	3.71%	3.64%	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, 1998

Item	59 Grazing Dairy Farms		17 More Profitable Dairy Farms		14 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	\$ 1,859	\$ 10.53	\$ 1,627	\$ 8.75	\$ 1,991	\$ 11.68
Purchased inputs costs	\$ 2,046	\$ 11.59	\$ 1,820	\$ 9.79	\$ 2,203	\$ 12.92
Total Costs	\$ 2,710	\$ 15.35	\$ 2,564	\$ 13.79	\$ 2,831	\$ 16.60
<u>Accrual Receipts From Milk</u>	\$ 2,749	\$ 15.57	\$ 2,924	\$ 15.73	\$ 2,615	\$ 15.33
Net Farm Income without Apprec.	\$ 703	\$ 3.98	\$ 1,104	\$ 5.94	\$ 412	\$ 2.42
Net Farm Income with Apprec.	\$ 834	\$ 4.72	\$ 1,209	\$ 6.51	\$ 555	\$ 3.26

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, 1998

Item	59 Grazing Dairy Farms		17 More Profitable Dairy Farms		14 Less Profitable Dairy Farms	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Purchased dairy grain & concentrate	\$ 660	\$ 3.74	\$ 649	\$ 3.49	\$ 658	\$ 3.86
Purchased dairy roughage	43	0.24	45	0.24	48	0.28
Total Purchased Dairy Feed	\$ 702	\$ 3.98	\$ 694	\$ 3.73	\$ 706	\$ 4.14
Purchased grain & conc. as % of milk receipts		24%		22%		25%
Purchased feed & crop exp.	\$ 849	\$ 4.81	\$ 863	\$ 4.64	\$ 822	\$ 4.82
Purchased feed & crop exp. as % of milk receipts		31%		30%		31%
Breeding	\$ 36	\$ 0.20	\$ 36	\$ 0.19	\$ 37	\$ 0.22
Veterinary & medicine	55	0.31	68	0.36	43	0.25
Milk marketing	97	0.55	86	0.46	80	0.47
Bedding	14	0.08	12	0.06	17	0.10
Milking supplies	83	0.47	58	0.31	88	0.52
Cattle lease	6	0.03	0	0.00	16	0.09
Custom boarding	1	0.01	1	0.01	5	0.03
bST expense	14	0.08	3	0.02	12	0.07
Other livestock expense	42	0.24	58	0.31	44	0.26

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, 1998

Item	Per Worker	Per Cow	Per Tillable Acre	Per Tillable Acre Owned
<u>59 Grazing Dairy Farms</u>				
Farm capital	\$ 194,307	\$ 6,438	\$ 2,163	\$ 3,403
Real estate		3,025		1,599
Machinery & equipment	34,321	1,137	382	
<u>Ratios:</u>				
Asset Turnover Ratio	Operating Expense	Interest Expense		Depreciation Expense
0.51	0.66	0.05		0.06
<u>17 More Profitable Dairy Farms</u>				
Farm capital	\$ 227,625	\$ 6,999	\$ 2,323	\$ 3,636
Real estate		3,368		1,750
Machinery & equipment	38,934	1,197	397	
<u>Ratios:</u>				
Asset Turnover Ratio	Operating Expense	Interest Expense		Depreciation Expense
0.52	0.59	0.04		0.05
<u>14 Less Profitable Dairy Farms</u>				
Farm capital	\$ 194,072	\$ 6,394	\$ 2,353	\$ 3,197
Real estate		2,945		1,472
Machinery & equipment	36,122	1,190	438	
<u>Ratios:</u>				
Asset Turnover Ratio	Operating Expense	Interest Expense		Depreciation Expense
0.46	0.71	0.07		0.08

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

Intensive Grazing Dairy Farms, 1998

Labor Force	Months	Age	Years of Educ.	Value of Labor & Mgmt.		
<u>59 Grazing Dairy Farms</u>						
Operator number 1	13.5	47	14	\$ 25,211		
Operator number 2	2.6	48	12	4,610		
Operator number 3	0.5	51	12	1,169		
Family paid	3.6					
Family unpaid	4.0					
Hired	<u>8.8</u>					
Total	32.9	/ 12 = 2.75 Worker Equivalent 1.30 Operator/Manager Equivalent				
<u>17 More Profitable Dairy Farms</u>						
Total Labor Force	29.5	/ 12 = 2.46 Worker Equivalent				
Operator's Labor		1.26 Operator/Manager Equivalent				
<u>14 Less Profitable Dairy Farms</u>						
Total Labor Force	30.8	/ 12 = 2.57 Worker Equivalent				
Operator's Labor		1.19 Operator/Manager Equivalent				
Labor Efficiency	<u>59 Grazing Dairy Farms</u>		<u>17 More Profitable Dairy Farms</u>		<u>14 Less Profitable Dairy Farms</u>	
	Total	Per Worker	Total	Per Worker	Total	Per Worker
Cows, average number	83	30	80	33	78	30
Milk sold, pounds	1,465,226	532,809	1,487,206	604,555	1,330,121	517,557
Tillable acres	247	90	241	98	212	82
Work units	840	305	802	326	776	302
	<u>59 Grazing Dairy Farms</u>		<u>17 More Profitable Dairy Farms</u>		<u>14 Less Profitable Dairy Farms</u>	
Labor Costs	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Value of operator(s) labor (\$1,600/mo.)	\$ 320	\$ 1.81	\$ 324	\$ 1.74	\$ 312	\$ 1.83
Family unpaid (\$1,600/mo.)	77	0.44	62	0.33	57	0.34
Hired	<u>245</u>	<u>1.39</u>	<u>227</u>	<u>1.22</u>	<u>253</u>	<u>1.48</u>
Total Labor	\$ 642	\$ 3.64	\$ 613	\$ 3.30	\$ 622	\$ 3.65
Machinery Cost	<u>\$ 448</u>	<u>\$ 2.54</u>	<u>\$ 490</u>	<u>\$ 2.64</u>	<u>\$ 465</u>	<u>\$ 2.72</u>
Total Labor & Mach.	\$ 1,090	\$ 6.18	\$ 1,103	\$ 5.94	\$ 1,087	\$ 6.37

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, 1997 & 1998

Selected Factors	Same 48 Grazing Dairy Farms		Same 17 More Profitable Dairy Farms		Same 12 Less Profitable Dairy Farms	
	1997	1998	1997	1998	1997	1998
<u>Size of Business</u>						
Average number of cows	78	80	78	80	59	59
Average number of heifers	56	59	61	62	39	40
Milk sold, lbs.	1,334,621	1,427,786	1,425,699	1,487,206	918,061	955,575
Worker equivalent	2.68	2.62	2.53	2.46	2.33	2.21
Total tillable acres	234	240	223	241	178	185
<u>Rates of Production</u>						
Milk sold per cow, lbs.	17,156	17,759	18,196	18,508	15,473	16,335
Hay DM per acre, tons	2.1	2.5	2.4	2.6	1.8	2.1
Corn silage per acre, tons	14.1	15.1	13.4	16.6	15.4	13.9
<u>Labor Efficiency</u>						
Cows per worker	29	31	31	33	25	27
Milk sold/worker, lbs.	497,993	544,956	563,517	604,555	394,018	432,387
<u>Cost Control</u>						
Grain & conc. purchased as % of milk sales	29%	24%	28%	22%	28%	25%
Dairy feed & crop exp. per cwt. milk	\$ 4.92	\$ 4.82	\$ 4.79	\$ 4.64	\$ 5.04	\$ 4.89
Labor & mach. costs/cow	\$ 1,079	\$ 1,094	\$ 1,083	\$ 1,103	\$ 1,142	\$ 1,131
Operating cost of producing cwt. of milk	\$ 11.04	\$ 10.46	\$ 10.10	\$ 8.75	\$ 11.39	\$ 11.30
<u>Capital Efficiency**</u>						
Farm capital per cow	\$ 6,560	\$ 6,640	\$ 6,823	\$ 6,999	\$ 6,567	\$ 6,634
Mach. & equip. per cow	\$ 1,177	\$ 1,193	\$ 1,145	\$ 1,197	\$ 1,369	\$ 1,318
Asset turnover ratio	0.40	0.49	0.41	0.52	0.37	0.43
<u>Profitability</u>						
Net farm income w/o apprec.	\$ 18,611	\$ 57,557	\$ 32,872	\$ 88,328	\$ 5,536	\$ 25,536
Net farm income w/apprec.	\$ 23,654	\$ 66,789	\$ 36,707	\$ 96,753	\$ 10,803	\$ 33,661
Labor & mgt. income per operator/manager	\$ -3,136	\$ 25,433	\$ 7,150	\$ 50,180	\$ -8,485	\$ 5,570
Rate of return on equity capital w/appreciation	-3.4%	8.5%	-0.2%	14.2%	-7.4%	0.7%
Rate of return on all capital w/appreciation	0.2%	8.1%	2.2%	12.3%	-2.9%	2.8%
<u>Financial Summary</u>						
Farm net worth, end year	\$ 338,971	\$ 377,083	\$ 377,482	\$ 429,784	\$ 262,868	\$ 287,905
Debt to asset ratio	0.34	0.31	0.30	0.26	0.33	0.27
Farm debt per cow	\$ 2,208	\$ 2,112	\$ 2,000	\$ 1,932	\$ 2,162	\$ 1,850

*Farms participating both years.

**Average for the year.

RECEIPTS AND EXPENSES PER COW AND PER CWT.
Same 48 Intensive Grazing Dairy Farms, 1997 & 1998

Item	1997		1998	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average Number of Cows	78		80	
Cwt. Of Milk Sold		13,346		14,278
<u>ACCRUAL OPERATING RECEIPTS</u>				
Milk	\$ 2,310	\$ 13.50	\$ 2,772	\$ 15.53
Dairy cattle	151	0.88	176	0.99
Dairy calves	20	0.12	22	0.12
Other livestock	9	0.05	22	0.12
Crops	0	0.00	75	0.42
Miscellaneous receipts	92	0.54	103	0.58
Total Receipts	\$ 2,583	\$ 15.09	\$ 3,170	\$ 17.76
<u>ACCRUAL OPERATING EXPENSES</u>				
Hired labor	\$ 228	\$ 1.34	\$ 231	\$ 1.29
Dairy grain & concentrate	665	3.89	656	3.68
Dairy roughage	40	0.24	50	0.28
Nondairy feed	0	0.00	1	0.00
Machine hire/rent/lease	39	0.23	47	0.27
Mach. repair & vehicle exp.	161	0.94	181	1.01
Fuel, oil & grease	59	0.35	53	0.30
Replacement livestock	28	0.17	43	0.24
Breeding	32	0.19	36	0.20
Veterinary & medicine	55	0.32	62	0.35
Milk marketing	97	0.57	104	0.58
Bedding	16	0.09	15	0.08
Milking supplies	58	0.34	77	0.43
Cattle lease	0	0.00	3	0.01
Custom boarding	5	0.03	2	0.01
bST expense	13	0.08	11	0.06
Other livestock expense	43	0.25	45	0.25
Fertilizer & lime	58	0.34	73	0.41
Seeds & plants	35	0.21	48	0.27
Spray/other crop expense	44	0.25	35	0.19
Land, building, fence repair	36	0.21	60	0.34
Taxes	73	0.43	71	0.40
Real estate rent/lease	32	0.19	36	0.20
Insurance	44	0.25	51	0.28
Utilities	82	0.48	78	0.44
Interest paid	157	0.92	158	0.89
Miscellaneous	40	0.24	37	0.21
Total Operating Expenses	\$ 2,144	\$ 12.53	\$ 2,261	\$ 12.67
Expansion Livestock	17	0.10	3	0.02
Machinery Depreciation	113	0.66	118	0.66
Real Estate Depreciation	70	0.41	68	0.38
Total Expenses	\$ 2,344	\$ 13.70	\$ 2,450	\$ 13.73
Net Farm Income Without Appreciation	\$ 239	\$ 1.39	\$ 719	\$ 4.03

RECEIPTS AND EXPENSES PER COW AND PER CWT.
Same 17 More Profitable Intensive Grazing Dairy Farms, 1997 & 1998

Item	1997		1998	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average Number of Cows	78		80	
Cwt. Of Milk Sold		14,257		14,872
<u>ACCRUAL OPERATING RECEIPTS</u>				
Milk	\$ 2,441	\$ 13.36	\$ 2,924	\$ 15.73
Dairy cattle	169	0.92	278	1.50
Dairy calves	21	0.12	22	0.12
Other livestock	6	0.03	41	0.22
Crops	28	0.15	127	0.68
Miscellaneous receipts	111	0.61	138	0.74
Total Receipts	\$ 2,776	\$ 15.19	\$ 3,531	\$ 18.99
<u>ACCRUAL OPERATING EXPENSES</u>				
Hired labor	\$ 236	\$ 1.29	\$ 227	\$ 1.22
Dairy grain & concentrate	676	3.70	649	3.49
Dairy roughage	47	0.26	45	0.24
Nondairy feed	0	0.00	0	0.00
Machine hire/rent/lease	39	0.21	49	0.26
Mach. repair & vehicle exp.	168	0.92	196	1.06
Fuel, oil & grease	56	0.31	52	0.28
Replacement livestock	10	0.05	63	0.34
Breeding	42	0.23	36	0.19
Veterinary & medicine	59	0.32	68	0.36
Milk marketing	100	0.55	86	0.46
Bedding	13	0.07	12	0.06
Milking supplies	56	0.31	58	0.31
Cattle lease	0	0.00	0	0.00
Custom boarding	2	0.01	1	0.01
bST expense	5	0.03	3	0.02
Other livestock expense	37	0.20	58	0.31
Fertilizer & lime	72	0.39	86	0.46
Seeds & plants	36	0.19	41	0.22
Spray/other crop expense	45	0.24	43	0.23
Land, building, fence repair	30	0.17	52	0.28
Taxes	71	0.39	69	0.37
Real estate rent/lease	22	0.12	29	0.16
Insurance	41	0.23	50	0.27
Utilities	78	0.43	72	0.39
Interest paid	158	0.86	147	0.79
Miscellaneous	40	0.22	40	0.22
Total Operating Expenses	\$ 2,138	\$ 11.70	\$ 2,231	\$ 12.00
Expansion Livestock	44	0.24	3	0.02
Machinery Depreciation	121	0.66	133	0.72
Real Estate Depreciation	52	0.29	60	0.32
Total Expenses	\$ 2,355	\$ 12.88	\$ 2,427	\$ 13.06
Net Farm Income Without Appreciation	\$ 421	\$ 2.31	\$ 1,104	\$ 5.74

RECEIPTS AND EXPENSES PER COW AND PER CWT.
Same 12 Less Profitable Intensive Grazing Dairy Farms, 1997 & 1998

Item	1997		1998	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average Number of Cows	59		59	
Cwt. Of Milk Sold		9,181		9,556
<u>ACCRUAL OPERATING RECEIPTS</u>				
Milk	\$ 2,066	\$ 13.28	\$ 2,459	\$ 15.18
Dairy cattle	118	0.76	91	0.56
Dairy calves	22	0.14	21	0.13
Other livestock	21	0.14	29	0.18
Crops	27	0.18	43	0.27
Miscellaneous receipts	86	0.55	99	0.61
Total Receipts	\$ 2,341	\$ 15.04	\$ 2,742	\$ 16.93
<u>ACCRUAL OPERATING EXPENSES</u>				
Hired labor	\$ 166	\$ 1.06	\$ 172	\$ 1.06
Dairy grain & concentrate	588	3.78	603	3.72
Dairy roughage	78	0.50	74	0.46
Nondairy feed	1	0.01	0	0.00
Machine hire/rent/lease	74	0.47	63	0.39
Mach. repair & vehicle exp.	158	1.02	190	1.17
Fuel, oil & grease	48	0.31	44	0.27
Replacement livestock	60	0.38	56	0.35
Breeding	31	0.20	32	0.20
Veterinary & medicine	54	0.35	52	0.32
Milk marketing	86	0.55	95	0.59
Bedding	17	0.11	16	0.10
Milking supplies	55	0.36	61	0.38
Cattle lease	0	0.00	0	0.00
Custom boarding	23	0.15	8	0.05
bST expense	30	0.19	11	0.07
Other livestock expense	61	0.39	54	0.34
Fertilizer & lime	48	0.31	52	0.32
Seeds & plants	35	0.23	26	0.16
Spray/other crop expense	35	0.23	37	0.23
Land, building, fence repair	34	0.22	59	0.37
Taxes	71	0.46	78	0.48
Real estate rent/lease	13	0.08	22	0.14
Insurance	52	0.33	49	0.30
Utilities	71	0.46	73	0.45
Interest paid	137	0.88	153	0.94
Miscellaneous	21	0.14	29	0.18
Total Operating Expenses	\$ 2,048	\$ 13.16	\$ 2,112	\$ 13.04
Expansion Livestock	0	0.00	0	0.00
Machinery Depreciation	119	0.77	112	0.69
Real Estate Depreciation	80	0.51	85	0.52
Total Expenses	\$ 2,247	\$ 14.44	\$ 2,309	\$ 14.26
Net Farm Income Without Appreciation	\$ 94	\$ 0.60	\$ 433	\$ 2.67

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

59 Intensive Grazing Dairy Farms, 1998

Size of Business			Rate of Production			Labor Efficiency	
Worker Equiv- alent	No. of Cows	Pounds Milk Sold	Pounds Milk Sold Per Cow	Tons Hay Crop DM/Acre	Tons Corn Silage Per Acre	Cows Per Worker	Pounds Milk Sold Per Worker
(11)*	(11)	(11)	(10)	(9)	(9)	(11)	(11)
5.07	196	3,648,117	21,895	3.5	19	45	813,648
3.10	79	1,436,488	19,783	2.7	17	33	605,236
2.36	62	1,083,686	16,976	2.4	15	29	511,765
2.00	48	797,806	15,233	2.0	13	23	363,988
1.39	40	541,940	12,201	1.2	9	18	260,120

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)
\$420	18%	\$225	\$796	\$577	\$3.82
544	22	346	986	716	4.45
654	24	451	1,141	845	4.92
762	26	536	1,321	988	5.32
928	33	719	1,628	1,114	6.54

Value and Cost of Production			Profitability			
Milk Receipts Per Cow	Oper. Cost Milk Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income w/Apprec.	Net Farm Inc. w/o Apprec.	Labor & Mgt. Inc. Per Oper.	Change in Net Worth w/Apprec.
(10)	(10)	(10)	(3)	(3)	(3)	(6)
\$3,392	\$7.46	\$13.18	\$170,397	\$150,894	\$89,805	\$137,413
3,051	9.28	14.78	75,237	62,586	33,143	52,202
2,678	10.47	15.58	52,041	42,692	23,056	28,363
2,396	11.53	16.80	36,588	31,390	13,155	16,053
1,959	13.24	22.84	20,114	12,016	-11,266	1,016

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

IDENTIFY AND SET GOALS

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

1. Goals should be Specific.
2. Goals should be Measurable.
3. Goals should be Achievable but challenging.
4. Goals should be Rewarding.
5. Goals should be Timed with a designated date by which the goal will be achieved.

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

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

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

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

Worksheet for Setting Goals

I. Mission and Objectives

What

When

Who is Responsible

[illegible]

The Farm Business Chart on page 35 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.

Needs improvement: _____

[illegible]

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 14)

Accrual Receipts - (defined on page 15)

Annual Cash Flow Statement - (defined on page 22)

Appreciation - (defined on page 16)

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 23)

Cash Paid - (defined on page 13)

Cash Receipts - (defined on page 15)

Change in Accounts Payable - (defined on page 14)

Change in Accounts Receivable - (defined on page 15)

Change in Inventory - (defined on page 15)

Current Portion - (defined on page 18)

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 20)

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 23.

Farm Debt Payments Per Cow - Planned or scheduled debt payments per cow represent the repayment plan scheduled at the beginning of the year divided by the average number of cows for the year.

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

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 17)

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 16)

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 28)

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 \$1,600 and dividing by the number of cwt. produced during the year.

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

Other Livestock Expenses - All other dairy herd and livestock expenses not included in more specific categories. Other livestock expenses include DHIC, registration fees and transfers.

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

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

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

Purchased Inputs Cost of Producing Milk - (defined on page 28)

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 18)

Return on Total Capital - (defined on page 18)

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 28)

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 \$1,600 per month plus the value of operator(s) labor at \$1,600 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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