DAIRY FARM BUSINESS SUMMARY

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INTENSIVE GRAZING FARMS NEW YORK 2002

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Intensive Grazing Farms
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2002 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.

This is the seventh year that a study of intensive grazing farms has been done. The farms included in the study are a subset of New York State farms participating in the Dairy Farm Business Summary (DFBS). Thirty-four 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 34 farms were asked to complete a grazing practices survey. Twenty-three of the farms did complete it. The investigators had special interest in practices used on farms with above average profitability. **Therefore the study centered on 30 farms which were not organic farms, were not first year grazers and on which at least 40 percent of forage consumed during the grazing season was grazed. Twenty-one of these 30 farms completed a grazing practices survey.** These 21 farms were divided on the basis of net farm income per cow (without appreciation) above and below $490 which was the average for these 21 intensive grazing farms. Eleven farms with net farm income per cow above $490 are in the "Above Average" group and ten farms with net farm income per cow below $490 comprise the "Below Average" group.

Program Objective

The primary objective of the dairy farm business summary, DFBS, is to help farm managers improve the business and financial management of their business through appropriate use of historical farm data and the application of modern farm business analysis techniques. This information can also be used to establish goals that will enable the business to better meet its objectives. In short, DFBS provides business and financial information needed in identifying and evaluating strengths and weaknesses of the farm business.

Format Features

The first section compares intensive grazing farms that participated in the Dairy Farm Business Summary project in 2001 and 2002. 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 9. The third section, Case Studies, describes two New York grazing farms. The fourth section summarizes grazing farms by herd size.

The summary and analysis portion of this report follows the same general format as in the 2002 DFBS individual farm report received by all participating dairy farmers. It may be used by any dairy farm manager who wants to compare his or her business with the average data of intensive grazing farms. A DFBS Data Check-in Form can be used by non-DFBS participants to summarize their businesses.

The summary and analysis portion of the report features:

(1) an income statement including accrual adjustments for farm business expenses and receipts, as well as measures of profitability with and without appreciation,

(2) a complete balance sheet with analytical ratios;

(3) a statement of owner equity which shows the sources of the change in owner equity during the year;

(4) a cash flow statement and debt repayment ability analysis;

(5) an analysis of crop acreage, yields, and expenses;

(6) an analysis of dairy livestock numbers, production, and expenses; and

(7) a capital and labor efficiency analysis.

PROGRESS OF THE FARM BUSINESS

Comparing your business with average financial data from DFBS grazing dairy farms that participated in both of the last two years can be helpful in comparing performance[1] and establishing goals for your business. It is equally important for you to determine the progress your business has made over the past two or three years, to compare this progress to your goals, and to set goals for the future. Please refer to the table on page 3 for selected factors from 29 farms that were grazing in both 2001 and 2002 and participated in the DFBS project for both years.

These 29 farms increased herd size, with average cow numbers increasing by 8.1 percent to 94 cows. Along with the herd size increasing, the average number of worker equivalents increased to 2.6 workers, an increase of 6.6 percent. Nontillable and tillable pasture and hay acres increased 4.1 percent. Milk sold per cow increased 2.7 percent to 16,522 pounds. This increase in production coupled with the increase in cow numbers led to a 11.1 percent increase in milk sold for the year.

With both herd size and worker equivalents increasing by similar amounts, cows per worker equivalent stayed the same at 36 cows per worker. Coupled with the increase in milk sold per cow, milk sold per worker equivalent increased 4.3 percent to 599,537 pounds per worker. With labor efficiency increasing, corresponding labor costs decreased. Hired labor cost per worker equivalent decreased 1.2 percent to $24,239. Hired labor costs per cwt. of milk sold decreased 2.1 percent to $1.41 per cwt. While hired labor expenses did decrease, with the fall in milk price, hired labor as a percent of milk sales increased 22.5 percent to 10.9 percent.

The 2002 growing season continued to be a challenge to manage. With the wet spring followed by dryer weather, hay and corn yields both fell 16 percent.

With the onset of the dry year, grazing conditions were not ideal and feed needs during the grazing season relied heavily on stored and purchased feeds. Grain and concentrates per cwt. of milk increased 2.8% to $3.66 per cwt. Dairy feed and crop expenses increased 1 percent to $5.03 per cwt. While feed costs did increase, the decrease in labor costs, interest costs, and the increased milk production resulted in the total farm operating costs decreasing by 5.5 percent, or 75 cents per hundredweight.

Gross milk price decreased 19.9 percent to $12.93 per cwt., and net milk price decreased 21 percent to $12.09 per cwt. The value of milk sold per cow decreased 17.6 percent to $2,145. Dairy cattle sales per cow decreased 12 percent while dairy calf sales per cow fell 6.8 percent.

While milk prices did decrease, government receipts increased from the previous year. With the average farm staying below the MILC cap for production, government receipts averaged $1.39 per cwt, an increase of $1.09, or 360 percent.

The significant decrease in milk price more than offset the decrease in costs, increase in milk production, increase in government receipts, and combined with the dry growing and grazing season, resulted in a decrease in farm profitability.

- Net farm income without appreciation decreased 37.2 percent to $29,887.
- Net farm income with appreciation decreased 52.1 percent to $35,311.
- Labor and management income per operator fell 89.5 percent to $2,034.
- Rate of return on equity capital without appreciation averaged -2.6 percent.
- Rate of return on all capital without appreciation averaged 0.1 percent.

While profits were down, the financial condition of the farms continued to improve. Net worth increased 3.1 percent, and the debt to asset ratio stayed at 0.34. Average debt per cow decreased by 5.9 percent to $1,949 per cow.

Overall, 2002 was a challenging year for the grazing dairy. While on average, profits decreased from 2001, the ability to lower costs coupled with the increase in government payments blunted the impact of the historically low milk price and allowed these farms to still increase net worth within their business.

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[1]The importance of trend analysis is to identify what areas changed, ask why they changed, and look at what you can do differently in the future to influence that change. If you would like help in developing and looking at the trends in your business, contact your local extension service and become involved in a financial management education program.

PROGRESS OF THE FARM BUSINESS

Same 29 Grazing Dairy Farms, 2001 & 2002

Selected Factors	Average of 29 Farms 2001	Average of 29 Farms 2002	Percent Change
Size of Business			
Average number of cows	87	94	8.1
Average number of heifers	65	68	4.6
Milk sold, lbs.	1,403,207	1,558,796	11.1
Worker equivalent	2.44	2.60	6.6
Total nontillable and tillable pasture & hay acres	246	256	4.1
Total nontillable pasture & tillable acres	290	294	1.4
Rates of Production			
Milk sold per cow, lbs.	16,091	16,522	2.7
Hay DM per acre, tons	2.5	2.1	-16.0
Corn silage per acre, tons	14.4	12.1	-16.0
Labor Efficiency & Costs			
Cows per worker	36	36	0.0
Milk sold per worker, lbs.	575,085	599,537	4.3
Hired labor cost per cwt.	$1.44	$1.41	-2.1
Hired labor cost per worker	$24,538	$24,239	-1.2
Hired labor cost as % of milk sales	8.9%	10.9%	22.5
Cost Control			
Grain & conc. purchased as % of milk sales	22%	28%	27.3
Grain & conc. per cwt. milk	$3.56	$3.66	2.8
Dairy feed & crop expense per cwt. milk	$4.98	$5.03	1.0
Labor & mach. costs per cow	$1,152	$1,132	-1.7
Total farm operating costs per cwt. sold	$13.53	$12.78	-5.5
Interest costs per cwt. milk	$0.79	$0.66	-16.5
Milk marketing costs per cwt. milk sold	$0.83	$0.85	2.4
Operating cost of producing cwt. of milk	$11.28	$9.74	-13.7
Total costs of producing cwt. of milk	$16.60	$14.73	-11.3
Capital Efficiency (average for the year)			
Farm capital per cow	$5,822	$5,873	0.9
Mach. & equip. per cow	$1,119	$1,116	-0.3
Asset turnover ratio	0.57	0.46	-19.3
Income Generation			
Gross milk sales per cow	$2,604	$2,145	-17.6
Gross milk sales per cwt.	$16.14	$12.93	-19.9
Net milk sales per cwt.	$15.31	$12.09	-21.0
Dairy cattle sales per cow	$200	$176	-12.0
Dairy calf sales per cow	$44	$41	-6.8
Government receipts per cwt.	$0.30	$1.39	363.3
Profitability			
Net farm income without appreciation	$47,553	$29,887	-37.2
Net farm income with appreciation	$73,666	$35,311	-52.1
Labor & mgt. income per operator/manager	$19,305	$2,034	-89.5
Rate of return on equity capital without apprec.	3.1%	-2.6%	-183.9
Rate of return on all capital without apprec.	4.2%	0.1%	-97.6
Financial Summary			
Farm net worth, end year	$360,641	$371,641	3.1
Debt to asset ratio	0.34	0.34	0.0
Farm debt per cow	$2,070	$1,949	-5.9

INTENSIVE GRAZING SURVEY SUMMARY

From the survey data of the 21 selected grazing farms, analysis of average production levels and profitability measures are shown below. Net farm income per cow without appreciation was used this year to evaluate whether certain practices contributed favorably to improved profitability. Net farm income is a measure of the net annual return from working, managing, and financing the farm business. The average net farm income per cow from the 21 selected farms of $490 was used to divide the 21 farms into 10 "above average" farms and 11 "below average" farms.

SELECTED PRODUCTION AND PROFITABILITY MEASURES

Intensive Grazing Dairy Farms, 2002

	10 Above Average Farms	11 Below Average Farms
Pounds milk sold per cow	19,868	14,626
Net farm income per cow without appreciation	$695	$197
Operating cost of producing milk per cwt.	$8.25	$10.23
Total cost of production per cwt.	$13.61	$15.02

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

GRAZING PRACTICES

Intensive Grazing Dairy Farms, 2002

	10 Above Average Farms	11 Below Average Farms
Average number of cows	70	136
Percent of farms with seasonal calving	0%	10%
Percent of farms with parlor-type milking system	18%	30%
Percent farms control internal parasites in cows	57%	50%
Percent farms control internal parasites in heifers	86%	60%
Percent farms control external parasites in cows	71%	60%
Percent farms control external parasites in heifers	86%	70%
Average percent cows bred A.I.	81%	82%
Average percent heifers bred A.I.	56%	64%
Average percent forage from pasture	70%	74%
Average length of grazing season	164 days	188 days
Average acres grazed per cow	1.1 acres/cow	1 acre/cow
Average pounds dry matter supplemented grain	15.7 lbs	14.3 lbs
Percent farms supplement with forage	90%	90%
Average pounds dry matter supplemented forage	7.8	10.7
Percent rotated after each milking	40%	45%
Percent rotated one time a day	50%	27%
Percent rotated every other day	10%	10%
Percent other rotation	0%	18%
Percent farms applied fertilizer	78%	73%
Percent farms applied manure to pasture	44%	50%
Percent farms that clipped pasture	100%	90%
Percent farms water every paddock	40%	80%
Average percent pasture that was reseeded in the last 10 years	31%	35%
Percent farms harvested mechanically	90%	70%
Average percent pasture harvested by machine	42%	25%
Most common pasture species:		
First	Native Grasses	Orchard Grass
Second	Orchard Grass	Rye
Third	Native White Clover	Native Grasses

Supplemental Feeding

The table below compares the farms that fed corn silage, grain, and other forage to those that fed only grain and other forage. The farms that fed grain, corn silage, and other forage in both the above average group and below average group had higher labor and management incomes per operator per cow and pounds of milk sold per cow than the farms that fed only grain and other forage. However, other factors influence the profitability, such as cost of feed. In past years, incorporation of corn silage has been identified as a forage supplement associated with higher profitability. For a more specific look at what was being fed to these grazing herds, see the following section "Ration Details".

CORN SILAGE SUPPLEMENTAL FEEDING
Intensive Grazing Farms, 2002

	10 Above Average Farms		11 Below Average Farms	
	(4) Corn Silage	(6) No Corn Silage	(8) Corn Silage	(3) No Corn Silage
Pounds of milk sold per cow	22,090	15,335	19,470	13,894
Net farm income per cow without appreciation	$816	$582	$280	$207
Pounds dry matter of corn silage	9.3 lbs.	-----	7 lbs.	-----
Percent forage from pasture	65%	73%	67%	69%
Pounds dry matter of other forage	1.6 lbs	2.9 lbs	3 lbs	4.2 lbs

Ration Details

Of the ten above average grazing farms (based on net farm income per cow without appreciation), many fed corn silage and other forages and all fed grain during the grazing season. Four farms fed baleage at an average of 5.2 pounds and four fed an average of 2.7 pounds of dry hay. In terms of grain, the above average farms averaged 15.72 pounds of grain per cow per day. All ten above average farms fed a complete feed. This is a change from previous years where more individual ingredients were fed. Only one farm fed 10.5 pounds of corn meal in addition to the complete feed.

Of the 11 below average farms (based on net farm income per cow without appreciation), many fed corn silage and other forages. All fed grain during the grazing season. One of the farms fed haylage and one farm fed 4.2 pounds of baleage and five farms fed an average of 2.5 pounds of dry hay. The below average farms fed an average of 14.3 pounds of grain per cow per day. Five of these farms fed an average of 10.2 pounds of corn meal, one fed an average of 2.3 pounds of soybean meal, and all eleven fed an average of 10.4 pounds of a grain mix.

CONCENTRATES FED
Intensive Grazing Farms 2002

	10 Above Average Farms	11 Below Average Farms
Total concentrates fed per cow per day	15.7 lbs	14.3 lbs
Concentrate fed per cwt. of milk sold	3.5 lbs	4 lbs
Concentrate as percent of milk check	26%	29%
Net farm income per cow without appreciation	$695	$197

Frequency of Rotation

In the above average group, four farms rotated cows into a fresh paddock after each milking, five farms provided new pasture once per day, one farm moved the cows every other day. In the below average group, five farms rotated cows into a fresh paddock after each milking, three moved the cows to a new pasture one time per day, one farm provided a fresh paddock every other day, one farm provided fresh pasture every third day, and one farm grazed a week before moving the pasture. The table below compares the rotation program of cows on new pasture to milk production and net farm income per cow without appreciation.

ROTATION FREQUENCY
Intensive Grazing Farms, 2002

	10 Above Average Farms		11 Below Average Farms	
	Rotation		Rotation	
	(4) After Each Milking	(6) Other	(5) After Each Milking	(6) Other
Pounds milk sold per cow	20,838	18,160	14,849	18,515
Net farm income per cow without appreciation	$690	$729	$226	$260

Water Provision

There are various options for providing water to pasture. In the above average group, four farms provided water in every pasture and six did not. In the below average group, eight farms provided water in every pasture and three did not.

PROVIDING WATER
Intensive Grazing Farms, 2002

	10 Above Average Farms		11 Below Average Farms	
	(4) Every Pasture	(6) Not Every Pasture	(8) Every Pasture	(3) Not Every Pasture
Pounds milk sold per cow	20,403	17,381	12,760	16,048
Average number of cows	80	55	170	81
Net farm income per cow without appreciation	$673	$720	$238	$256

Milking System

There are several ways to classify milking systems. For the purposes of this analysis, all farms utilizing some sort of a parlor (herringbone, parabone, rotary, or other) were separated from those utilizing pipeline, dumping station, or bucket and carry system. The type of milking system may impact the degree of control the manager has over the supplemental feeding system. In the above average group, eight farms used a pipeline, two had other milking systems. In the below average group, six farms used a pipeline, five used other milking systems.

MILKING SYSTEM
Intensive Grazing Farms, 2002

	10 Above Average Farms		11 Below Average Farms	
	(8) With Pipeline	(2) Other	(6) With Pipeline	(5) Other
Pounds milk sold per cow	19,134	19,343	18,515	14,849
Net farm income per cow without appreciation	$750	$562	$260	$226
Average number of cows	71	127	74	212
Operating cost of producing milk per cwt.	$12.10	$11.91	$11.59	$13.22

Commercial Fertilizer

Application of commercial fertilizer to pasture may lead to a boost in pasture forage yield and quality. In the above average group, seven farms applied commercial fertilizer. Of these, four farms applied a mixture that included nitrogen, phosphorous, and potassium; two applied urea; and one applied ammonium sulfate. In the below average group, eight farms applied commercial fertilizer. In addition to commercial fertilizer, four above average farms and five below average farms applied manure to pasture other than through grazing.

COMMERCIAL FERTILIZER
Intensive Grazing Farms, 2002

	10 Above Average Farms		11 Below Average Farms	
	(7) Applied Fertilizer	(3) Did Not Apply Fertilizer	(8) Applied Fertilizer	(3) Did Not Apply Fertilizer
Pounds milk sold per cow	19,216	19,803	16,181	17,974
Net farm income per cow without appreciation	$744	$725	$244	$322
Operating cost of producing milk/cwt	$8	$8.43	$12.40	$11
Acres grazed per cow	1.02	.94	1.17	.58

Intensive Grazing Satisfaction Comments

On a scale of one to five, with five being the highest satisfaction, the grazers of 2002 rated the year with the following. Eleven had a satisfaction level of five, nine had a satisfaction level of four and one farm had a satisfaction level of three. This is high praise since it was a tough year with the drought over much of the area.

Some additional comments were:

- "I like it when the cows are out. They have better feet and legs, there are less stepped on teats, and are more healthy overall."
- "A good way to go."
- "Drought led to frustration with grazing this year."

Grazing Trends

The table below compares key figures from 2002 grazing farms to an average of the last six years. The average cow numbers are up considerably. This is not due to gradually increasing herd sizes, but rather that grazing is becoming more accepted by larger farms. Milk sold per cow is up four percent. Production is tied to many factors, but to have an increase in production during a drought year shows grazing farmers are becoming more experienced at adapting their systems to maintain production with constantly changing pasture resources. Operating cost per hundredweight is one of the indicators of why grazing farms are the same, if not more profitable, than non-grazing farms. An average operating cost of $9.05 per hundredweight in 2002 was the third lowest since grazing summaries have been published. Net farm income per cow was a positive figure in 2002 showing that grazing farmers did well in adapting to different situations. Grain expense as a percent of milk income and cost of grain per hundredweight were impacted by the drought since farmers fed more stored feed to offset the lack of pasture. Also, concentrates needed to be fed at a higher rate to offset the loss of the high quality pasture.

2002 GRAZING INFORMATION COMPARED TO 1996 - 2001 Averages

	21 Grazing Dairy Farms, 2002 Averages	1996 - 2001 Average of Grazing Farms
Number of cows	104	85
Pounds milk sold per cow	17,966	17,325
Operating cost of producing milk per cwt.	$ 9.05	$10.98
Net farm income per cow without appreciation	$490	$460
Purchased grain and concentrate as % of milk receipts	29	26
Grain and concentrate per cwt.	$3.73	$4.09

INTENSIVE GRAZING FARMS VS. NON-GRAZING FARMS

New York State Dairy Farms, 2002

Item	All Intensive Grazing Farms[3]	Non-Grazing Farms[4]	Profitable Grazing Farms[5]	Profitable Non-Grazing Farms[6]
Number of farms	30	103	10	27
Business Size & Production				
Number of cows	94	91	70	73
Number of heifers	68	68	55	53
Milk sold, lbs.	1,568,703	1,815,774	1,384,775	1,459,740
Milk sold/cow, lbs.	16,618	20,011	19,868	19,946
Milk plant test, % butterfat	3.79%	3.72%	3.85%	3.68%
Cull rate	24.5%	30.8%	25.7%	26.0%
Tillable acres, total	243	310	232	223
Hay crop, tons DM/acre	2.2	2.4	2.4	2.4
Corn silage, tons/acre	12.4	13.0	14.7	13.0
Forage DM/cow, tons	3.9	8.2	6.0	7.9
Labor & Capital Efficiency				
Worker equivalent	2.59	3.10	2.56	2.48
Milk sold/worker, lbs.	605,677	585,734	540,928	588,605
Cows/worker	36	29	27	29
Farm capital/worker	$213,043	$239,732	$173,075	$224,224
Farm capital/cow	$5,870	$8,167	$6,330	$7,617
Farm capital/cwt. milk	$35	$41	$32	$38
Machinery & equipment per cow	$1,109	$1,834	$1,610	$1,645
Milk Production Costs & Returns				
Selected costs/cwt.:				
Hired labor	$1.39	$1.48	$1.32	$1.01
Grain & concentrate	$3.64	$3.84	$3.37	$3.63
Purchased roughage	$0.57	$0.24	$0.22	$0.36
Replacements purchased	$0.07	$0.24	$0.01	$0.31
Vet & medicine	$0.34	$0.48	$0.24	$0.40
Milk marketing	$0.83	$0.83	$0.93	$0.85
Other dairy expenses	$1.18	$1.34	$1.09	$1.10
Operating cost of producing milk/cwt.	$9.76	$10.24	$8.25	$8.39
Total labor cost/cwt.	$4.09	$4.17	$4.41	$4.02
Operator resources/cwt.	$2.13	$2.29	$2.50	$2.65
Total cost of producing milk/cwt.	$14.70	$15.38	$13.61	$13.42
Average farm price/cwt.	$12.94	$12.82	$13.09	$12.88
Related Cost Factors				
Hired labor/cow	$232	$296	$260	$203
Total labor/cow	$683	$831	$872	$804
Purchased dairy feed/cow	$703	$814	$711	$797
Purchased grain & concentrate as % of milk receipts	28%	30%	26%	28%
Vet & medicine/cow	$57	$95	$47	$81
Machinery costs/cow	$439	$605	$597	$517
Feed & crop exp./cwt.	$4.99	$4.94	$4.20	$4.65
Profitability Analysis				
Net farm income (with appreciation)	$35,636	$26,173	$57,228	$48,399
Net farm income (without apprec.)	$30,275	$23,262	$48,648	$49,460
Net farm income per cow (w/o apprec.)	$322	$256	$695	$678
Net farm income per cwt. (w/o apprec.)	$1.93	$1.28	$3.51	$3.39
Labor & management income/operator	$2,482	$-6,816	$20,027	$16,845
Labor & mgmt. income/oper./cow	$26	$-75	$286	$231
Rates of return on:				
Equity capital with appreciation	-1.1%	-3.2%	5.4%	2.8%
All capital with appreciation	1.2%	-0.9%	5.6%	3.6%

[3]Farms grazing at least three months of year, changing paddock at least every three days, forage from pasture at least 30 percent, and no organic farms.
[4]Farms with similar herd size, as the 30 rotational grazing farms.
[5]Farms with net farm income per cow greater than $490, had been grazing at least two years, and forage from pasture at least 40 percent.
[6]Farms with similar herd size as the 10 profitable grazing farms and net farm income per cow greater than $490.

CASE STUDIES

Howland Farm

Rob and Darlene Howland began farming together 27 years ago in the hills outside Candor, New York. The soils cropped are typical of the Southern Tier, somewhat poorly drained, Mardin and Volusia soils. In the early years Rob was dedicated to a corn-alfalfa rotation. It wasn't until the early 90's that he became discouraged with the battle to maintain productive alfalfa stands and receive only break even corn yields. Rob decided to learn how to manage grass and grow corn and alfalfa only on the best soils. Pasture became an important piece of a grass based forage production system.

Their five daughters have been an integral part of the farm and farm chores but currently only one daughter is still at home, so their labor force has changed over time. They currently have one full-time employee and a college student intern this summer that wanted to work on a grazing farm.

Rob and Darlene have clear, defined goals that guide their farming style. Rob describes his operation as 'production driven'. He and Darlene have set specific targeted production goals to guide their production. Rob explains that they 'backed into' these goals after thinking about the income needed to support their desired standard of living, level of equipment and farm maintenance, and retirement savings.
Their production goals are outlined as:

- Keep each of their 80 stalls filled with a milking cow
- Average 80 pounds of milk/cow/day
- Keep the herd from 150-180 days in milk (The herd calves year round)
- Receive the top quality premium by maintaining Somatic cell count less than 150,000

Rob admits that there has been much to learn with managed grazing. He figures he has six months to graze and during that time there are periods that are too hot, too cold, too wet or too dry to support good intakes and production, leaving only four to five months to graze. As a result the cows can be off pasture as much or more than they are on during the grazing season. Rob does not subordinate his production goals to pasture management. Pasture is used to support their goals.

When Howlands began intensive grazing management 11 years ago they put 100 acres of native pasture that had never been reseeded into the system. Although the pasture was native grasses, bluegrass and similar species and had never been limed or fertilized, Rob describes the grass as reasonable. He began to soil sample and began a regular pattern of fertilization. Fifty acres of the poorer crop ground was converted to the pasture system and was seeded with orchardgrass and ladino clover. Since Howlands have excess pasture acres for their herd size, the lower production from the native grasses is not a problem for their rotation scheme.

Rob and Darlene describe the largest gain from intensive grazing as a savings of time. The chore time saved is used to harvest high quality forages to support milk production. Another savings is that the soils are kept in sod which reduces compaction and run-off.

When it's too hot or other conditions cause intakes to drop, the cows are brought into a tunnel ventilated tie-stall barn with well-bedded stalls. Since stall upgrades would require extensive renovation in the barn, the stalls are heavily bedded to ensure comfort. Rob claims that tunnel ventilation is the best improvement he has made. On a hot summer day the barn is said to be the most comfortable place on the farm.

Water System

A well was drilled on the top of the hill to provide water to each paddock via black plastic and portable tubs. After burning out several water pumps when the cows tipped over tubs a safety system using a timer that automatically shuts the pump off after it runs a set length of time was put in place. When the water system was originally installed ¾" black plastic pipe was used. This has proven to have too low a capacity to supply the herd, thus the tipping over. He found by having two tubs in each paddock the tipping problem is reduced. His recommendation is that anyone installing a new system use 1 to 1-1/2"-inch line, depending on the distance water needs to travel.

Feeding Program

Feed cost savings are not captured on the Howland farm nor do they see any significant changes in health during the pasture season. The winter feeding program consists of 2/3 hay crop silage to 1/3 corn silage plus 15 pounds of high quality 2nd cutting baleage per cow per day. They have a monorail concentrate feeder with four bays that feeds around the barn 6 times per day in the winter and five times per day during the pasture season.

When the cows are grazing, the haylage is removed from the forage fed, and the corn silage stays in at about 30 pounds per cow. The concentrates are only slightly adjusted. A first cutting of all grass baleage is fed at about seven to eight pounds per cow per day and is increased or decreased to maintain dry matter intake. The summer-fed baleage is higher in fiber than the winter -fed baleage. They do struggle with lower butterfat levels during the grazing season.

Pasture Management

Pasture Management is fairly intensive and scheduled. Before the start of first cutting hay harvest, a pasture paddock is mowed and round baled. Then a silo is filled with first cutting. About every five to seven days after the first paddock is harvested another paddock is cut and baled. The harvest moves back and forth between hay ground and pasture ground. Rob has a rule of thumb that it takes a day to mow and a day to bale.

The staggered harvest is intended to help manage the pasture growth at the right height for capturing high quality grazing. By mid-June the cows have been through the first four paddocks four or five times and refusals are significant. At that time, the first mowed paddocks are ready for grazing and the early paddocks are rested for regrowth and then mowed and baled. When the weather does not cooperate the schedule is upset. In wet years it can get backed up to the point that there is no pasture at the right stage of growth ready for the cows. The cows are moved back to the barn since the paddocks are either too mature or already grazed down. This pattern is their style of intensive clipping. Rob admits that he is working long, hard hours. He and Darlene are thinking about alternatives to this system such as clipping at an earlier growth stage with a rotary mower.

Rivington Farm Case Study

Bruce and Nancy Rivington's grazing dairy is a relatively new operation with start-up occuring in July of 2000. The farm currently consists of 330 cows milking with 625 acres of pasture for the milking cows and youngstock. By fall, over 400 cows will be milking.

History

While the farm is relatively new, grazing cows is not new to Bruce and Nancy. They are originally from Almonte, Ontario, Canada, which is 30 miles west of Ottawa. They were a 200-cow grazing dairy operating under the Canadian quota system. With quota being extremely expensive and having only a small amount of quota, they felt that it was too pricey to invest and grow their farm in Canada; therefore, in order to follow their dreams and goals, they needed to move. They started looking for a farm in the United States during the winter of 1998-1999, with an emphasis on finding a farm suitable for grazing. After looking in Wisconsin, North Carolina, and New York, they chose to focus on New York.

With a continued focus on grazing, they had some specific characteristics that they were looking for. The minimum things they were looking for were at least 400 continuous acres, good soil, viable home, and a good school district. Working closely with Gary and Betty Burley from East Hill Farms in Western New York, they looked at 18 different farms, finally settling on the site in central New York in the town of Hamilton.

Bruce and Nancy continue to be admirers and students of grazing and how it is done around the world, especially in New Zealand and what is occuring there. Part of their focus with the move is to apply many of the successful management programs and ideas that they have gathered from visiting many of the grazing areas in the world.

The Milking Parlor

The milking parlor was moved down from the Canadian farm. The greenhouse structure that it was housed in was also moved. The parlor was rebuilt, enlarged and attached to the end of the existing tie stall barn. While the barn was not in the middle of the pasture, it did lower the costs for the new farm. The old tie stall barn was converted into a milk house, utility room, tank room, and holding area for the parlor. The parlor is a 44 aside swing setup housed in the 30-foot by 110-foot greenhouse. The original parlor was a 16 swing, so the parlor was added to in the middle and 28 additional claws were added.

Milking

With 330 cows being milked, it takes two hours to do the milking. Two people operate the parlor and a third person moves cows and feeds the one-shot. The farthest walk to any of the pastures utilized by the cows is 1.5 miles, but closer this year due to the fast growing grasses.

Grazing Layout

With very little of the farm fenced at the time of purchase, there was lots of flexibility in laying out laneways and paddocks. Main lanes are 25 feet wide, narrowing as they approach end of runs. Permanent fence surrounds the whole farm, with some permanent interior fencing, with break wires utilized for the remainder of fencing. When possible, the permanent fencing was laid out with a post every 20 meters, or 65 feet, and paddock widths of 100 meters, or 328 feet. With this layout, it is very simple to change paddock sizes with break wires and know the size of the paddocks because every two poles equals one acre. This follows a key operating principle of the farm called "keeping it simple". Over 17,000 feet of pressurized water pipe is used to provide water in every paddock.

Grass Mix

In 2000, 200 acres were re-seeded to rye grasses. Currently there are 250 acres of rye grass, with the remaining acres a mix of native grasses and alfalfa. The milk cows have access to over 450 acres of pasture, depending on the grass growth. In 2002, this wasn't enough, currently through 2003, only 300 acres are being utilized by the milking herd. Youngstock are grazed on an additional 325 acres, with some of the land being utilized for corn and haylage. Weeds are controlled by clipping when necessary. During the 2002 grazing season, commercial fertilizer was applied to the pastures.

Supplementation

While on grass during the grazing season, the milking cows are supplemented with a one-shot grist at 20 pounds per day. It is fed outside the parlor after each milking. For the 2002 year, the cows averaged just over 10,000 pounds of milk with 3.94% butterfat and 3.26% protien. Currently, plans are being developed to improve the efficiency of supplementation, since this currently requires more labor than Bruce and Nancy would like.

Winter Feeding

During the winter, a TMR had been purchased for the first two years. This year, haylage and corn are being custom grown and harvested to be fed during the winter. The cattle are housed in open sheds with bedded packs. The heifers are housed outdoors with windbreaks until spring or whenever it is muddy, at which point they have access to sheds.

Milking Herd

Currently the milking herd is 330 cows, with the expectation that it will grow to over 400 cows by the fall of 2003. The herd is semi-seasonal, with heavy calving in both spring and fall. The herd is predominantly Ayrshire followed by Jersey, Holstien and a number of other breeds and cross breeds. In the 2002 summer breeding, all cows were bred to New Zealand Ayrshires. In the fall, Ayrshires and Jerseys were bred AI to New Zealand Ayrshires and any cows showing black were bred to New Zealand Freisien genetics. In 2003, all breeding is natural to Ayrshire, Jersey and crossbred rented bulls.

Labor

Along with Bruce and Nancy, there are two full-time and three part-time employees on the farm. In 2002, there were 3.45 worker equivalents, with 87 cows per worker, and 950,155 pounds of milk sold per worker equivalent. With the size of the parlor and the layout of the grazing system, as the herd size increases, there will be very little added labor, with the intention of attaining over 100 cows per worker.

Youngstock

All heifer calves and some bull calves are raised. Calves are started in individual pens for the first two days. They are then grouped in pens of ten and are fed with mob feeders. If there are enough calves of similar size they will group up to 30 within a pen. They are weaned at six weeks, at which time they are turned out onto grass and supplemented with grain and unlimited water access. Depending on numbers, there may not be shelters available for all the calves and heifers, but there is usually shade.

Future Plans

While the last 18-24 months have been challenging in the dairy industry, Bruce and Nancy are very excited to be grazing in New York and look forward to making changes and improving the grazing farm. Over the next several years, they plan to move towards a more seasonal herd with calving in the late winter or early spring and with herd size at 400 cows. With this in mind, all heifers are being bred to calve in early April, which is leading to calving ages of 23-30 months of age, depending on when the calf was born. Once the herd is more seasonal, the targeted age of first calving is 23 months of age.

Once the herd is seasonal, internal growth will be utilized to grow the herd to 500 cows, which will maximize the pasture resources and milking center on the farm. All these changes are planned with very little additional labor, which will improve labor efficiency drastically. The seasonal herd will also allow for more time away from the farm.

With progress toward these goals, Bruce and Nancy feel that the grazing operation will meet their goals for a profitable business that will be successful over time and provide opportunities for family members to be involved in the business.

SUMMARY OF GRAZING FARMS BY HERD SIZE

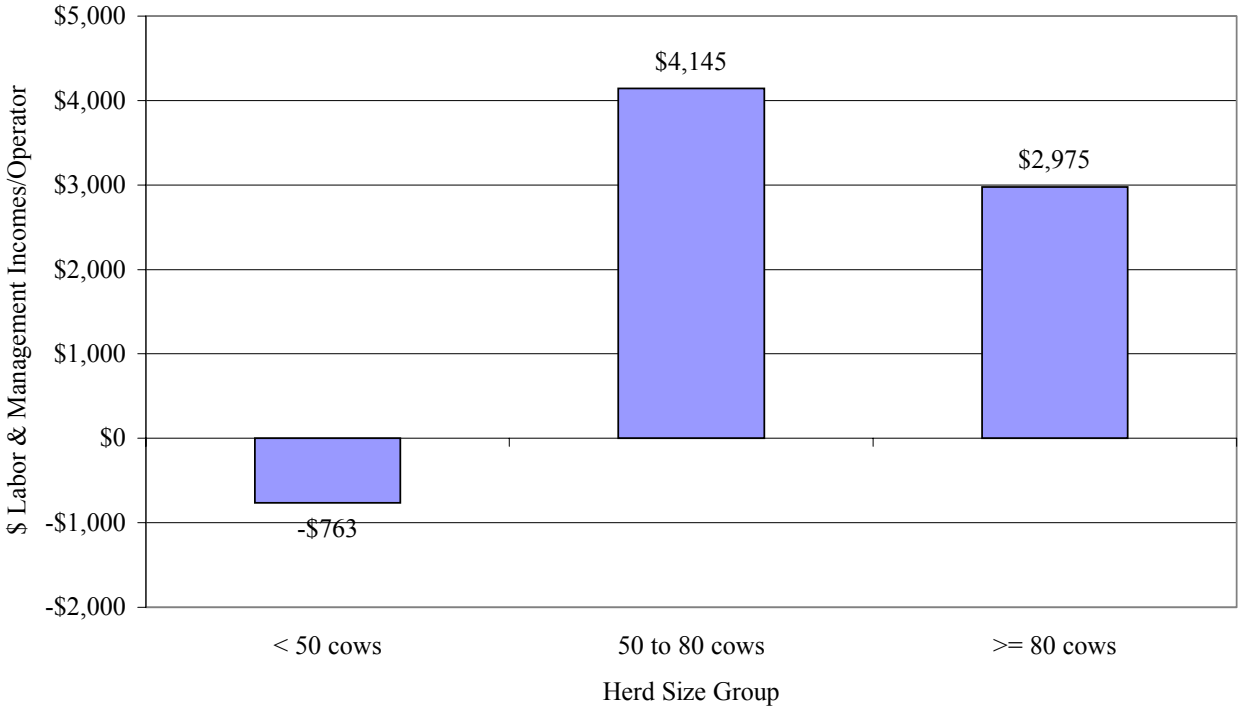
There were five farms with more than 100 cows that indicated on the 2002 Dairy Farm Business Summary that they were grazers. The chart below shows the variation in labor and management income per operator by herd size group. The table on the following page compares grazing farms by herd size group.

Grazing Practices From Five Grazing Farms With More Than 100 Cows:

- Average size of the herd was 250 cows.
- This group received 73% of their forage DM from pasture during the grazing season.
- All farms in this group provided water in every pasture.
- Two of these farms fed no additional forage and fed the product “One Shot” in place of concentrates.
- None of the farms fed baleage.
- All farms clipped pastures at least once during the year.
- One of the farms was a seasonal herd.
- All but one selected the highest score for satisfaction (5). The other farm chose the second highest (4).
- The average grazing season for this group was 196 days.
- All but one of the herds moved their cows after each milking, while the other herd moved the herd every 3 days.

DISTRIBUTION OF LABOR & MANAGEMENT INCOMES PER OPERATOR

30 Intensive Grazing Dairy Farms, 2002



INTENSIVE GRAZING FARMS BY HERD SIZE GROUP

30 Intensive Grazing Dairy Farms, 2002

Item	Less Than 50 Cows	50 to 80 Cows	80 Cows Or More
Number of farms	8	12	10
Business Size & Production			
Number of cows	41	65	172
Number of heifers	35	45	123
Milk sold, lbs.	721,146	1,213,434	2,673,071
Milk sold/cow, lbs.	17,697	18,597	15,514
Milk plant test, % butterfat	3.76%	3.77%	3.82%
Cull rate	24.4%	26.2%	24.4%
Tillable acres, total	127	150	447
Hay crop, tons DM/acre	1.8	1.9	2.5
Corn silage, tons/acre	20.8	13.1	10.9
Forage DM/cow, tons	4.3	3.9	3.8
Labor & Capital Efficiency			
Worker equivalent	1.93	2.23	3.56
Milk sold/worker, lbs.	373,651	544,141	750,863
Cows/worker	21	29	48
Farm capital/worker	$136,974	$187,178	$264,877
Farm capital/cow	$6,448	$6,422	$5,482
Farm capital/cwt. milk	$37	$34	$35
Milk Production Costs & Returns			
Selected costs/cwt.:			
Hired labor	$0.57	$0.96	$1.80
Grain & concentrate	4.10	3.64	3.54
Purchased roughage	0.81	0.66	0.47
Replacements purchased	0.03	0.08	0.08
Vet & medicine	0.34	0.34	0.35
Milk marketing	0.93	0.96	0.73
Other dairy expenses	1.01	1.32	1.16
Operating cost of producing milk/cwt.	9.63	9.23	10.09
Operator resources/cwt.	4.92	2.58	1.29
Total labor cost/cwt.	6.25	4.48	3.43
Total cost of producing milk/cwt.	16.42	14.73	14.32
Average farm price/cwt.	12.86	12.89	12.99
Related Cost Factors			
Hired labor/cow	$100	$180	$280
Total labor/cow	1,099	836	534
Purchased dairy feed/cow	864	803	624
Purchased grain & concentrate as % of milk receipts	32%	28%	27%
Vet & medicine/cow	$60	$63	$54
Machinery costs/cow	$517	$498	$396
Feed & crop exp./cwt.	$5.37	$4.92	$4.94
Profitability Analysis			
Net farm income (without appreciation)	$14,330	$31,782	$41,219
Net farm income/cow (without appreciation)	$350	$489	$240
Net farm income/cwt. (without appreciation)	$1.99	$2.62	$1.54
Labor & management income/operator	$-763	$4,145	$2,975
Rates of return on:			
Equity capital with appreciation	-7.2%	-2.3%	1.3%
All capital with appreciation	-3.8%	-0.4%	3.2%

SUMMARY AND ANALYSIS OF THE FARM BUSINESS

Business Characteristics

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

BUSINESS CHARACTERISTICS
30 Intensive Grazing Dairy Farms, 2002

Type of Farm	Number
Dairy	30
Part-time dairy	0
Dairy cash-crop	0

Type of Ownership	Number
Owner	25
Renter	5

Type of Business	Number
Sole Proprietorship	24
Partnership	5
Limited Liability Corporation	1
Subchapter S Corporation	0
Subchapter C Corporation	0

Type of Barn	Number
Stanchion or Tie-Stall	19
Freestall	8
Combination	3

Milking Frequency	Number
2 times per day	28
3 times per day	1
Other	1

Milking System	Number
Bucket & carry	0
Dumping station	1
Pipeline	19
Herringbone-conventional exit	5
Herringbone-rapid exit	0
Parallel	1
Parabone	0
Rotary	0
Other	4

Production Records	Number
Testing Service	26
On-Farm System	1
Other	0
None	3

bST Usage	Number
Used on <25% of herd	2
Used on 25-75% of herd	3
Used on >75% of herd	2
Stopped using in 2002	1
Not used in 2002	22

Business Record System	Number
Account Book	9
Accounting Service	2
On-farm computer software	19
Other	0

The averages used in this report were compiled using data from all the participating grazing dairy farms in New York unless noted otherwise. There are full-time dairy 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 2002.

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
30 Intensive Grazing Dairy Farms, 2002

Expense Item	Cash Paid	-	Change in Inventory or Prepaid Expense	+	Change in Accounts Payable	=	Accrual Expenses
Hired Labor	$ 21,673		$ 36	<<	$ 171		$ 21,808
Feed							
Dairy grain & concentrate	56,326		50		853		57,129
Dairy roughage	8,959		133		157		8,982
Nondairy	157		-1		0		158
Machinery							
Machinery hire, rent & lease	5,941		0	<<	-17		5,924
Machinery repairs & farm vehicle exp.	12,707		-119		49		12,875
Fuel, oil & grease	4,411		-51		73		4,535
Livestock							
Replacement livestock	1,171		0	<<	0		1,171
Breeding	3,087		37		90		3,140
Veterinary & medicine	5,401		38		16		5,379
Milk marketing	12,938		0	<<	57		12,995
Bedding	1,278		-63		100		1,441
Milking supplies	5,125		67		5		5,063
Cattle lease & rent	144		0	<<	0		144
Custom boarding	3,513		0	<<	1		3,515
bST expense	1,176		24		54		1,206
Other livestock expense	4,120		7		15		4,128
Crops							
Fertilizer & lime	6,267		120		1,216		7,363
Seeds & plants	2,090		-403		0		2,493
Spray, other crop expense	2,290		-25		-70		2,245
Real Estate							
Land, building & fence repair	4,287		-14		-155		4,147
Taxes	4,321		-44	<<	317		4,682
Rent & lease	5,020		0	<<	5		5,025
Other							
Insurance	3,752		0	<<	74		3,825
Utilities (farm share)	6,096		0	<<	-36		6,059
Interest paid	10,756		0	<<	32		10,788
Miscellaneous	3,517		5		16		3,527
Total Operating	$ 196,523		$ -204		$ 3,023		$ 199,749
Expansion livestock	1,040		0	<<	0		1,040
Machinery depreciation							12,728
Building depreciation							6,860
TOTAL ACCRUAL EXPENSES							$ 220,377

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 2002 but not paid for. A decrease is subtracted because it represents payment for resources used before 2002.

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
30 Intensive Grazing Dairy Farms, 2002

Receipt Item	Cash Receipts	+	Change in Inventory	+	Change in Accounts Receivable	=	Accrual Receipts
Milk sales	$ 204,598				$ -1,563		$ 203,035
Dairy cattle	9,376		$ 6,461		46		15,883
Dairy calves	3,977				53		4,029
Other livestock	2,610		-1,304		27		1,332
Crops	1,428		-1,972		0		-545
Government receipts	21,644		0 [7]		954		22,598
Custom machine work	349				27		376
Gas tax refund	408				0		408
Other	3,255				280		3,536
Less nonfarm noncash capital[8]		(-)	0 [8]			(-)	0
Total Receipts	$ 247,645		$ 3,185		$ -177		$ 250,652

[7]Change in advanced government receipts.
[8]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 2002 for the 2003 crop year in excess of funds earned for 2002. Likewise, a decrease is added to cash government receipts because it represents funds earned for 2002 but received in 2001.

Changes in accounts receivable are calculated by subtracting beginning year balances from end year balances. Payments in January for milk produced in December 2002 compared to January 2002 payments for milk produced in 2001 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[9] 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.

[9]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.

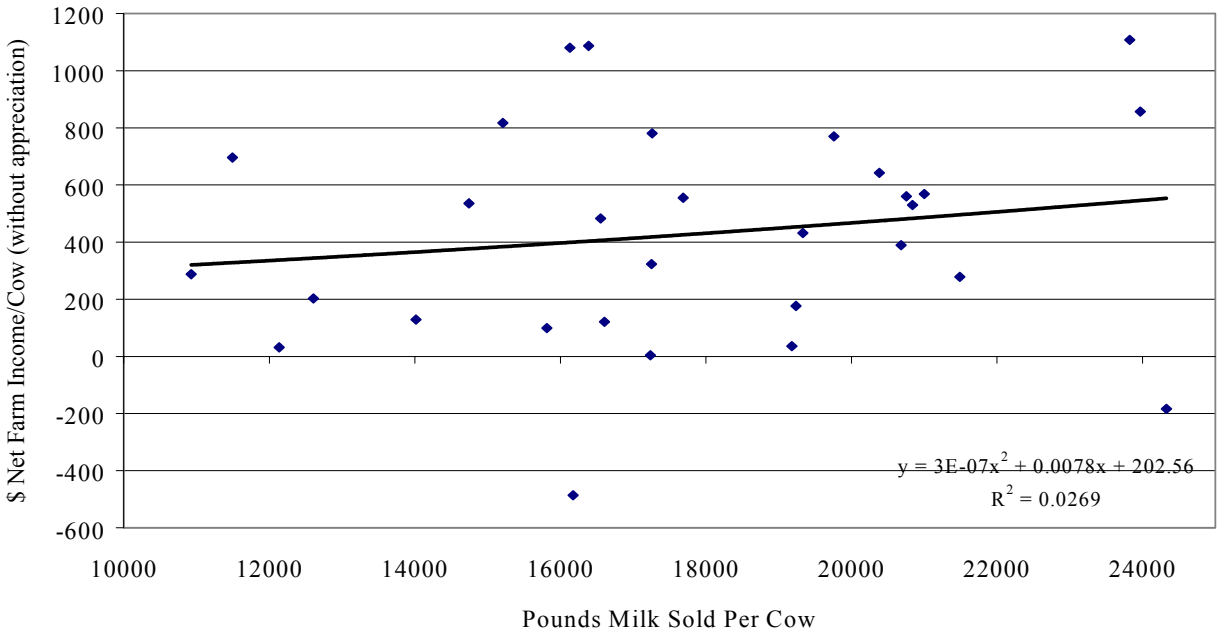
NET FARM INCOME
Intensive Grazing Dairy Farms, 2002

Item	30 Grazing Dairy Farms[10]	10 Above Average Farms[10]	11 Below Average Farms[10]
Total accrual receipts	$ 250,652	$ 233,744	$ 306,677
Appreciation: Livestock	-7,275	-1,034	-8,037
Machinery	1,832	3,625	1,705
Real Estate	10,975	5,982	9,699
Other Stock & Certificates	-171	7	-1,900
Total Including Appreciation	$ 256,013	$ 242,324	$ 308,144
Total accrual expenses	- 220,377	- 185,096	- 279,943
Net Farm Income (with appreciation)	$ 35,636	$ 57,228	$ 28,201
Net Farm Income Per Cow (with appreciation)	$ 379	$ 818	$ 207
Net Farm Income (without appreciation)	$ 30,275	$ 48,648	$ 26,734
Net Farm Income Per Cow (without appreciation)	$ 322	$ 695	$ 197

[10]See page 1 for a description of these groups of farms.

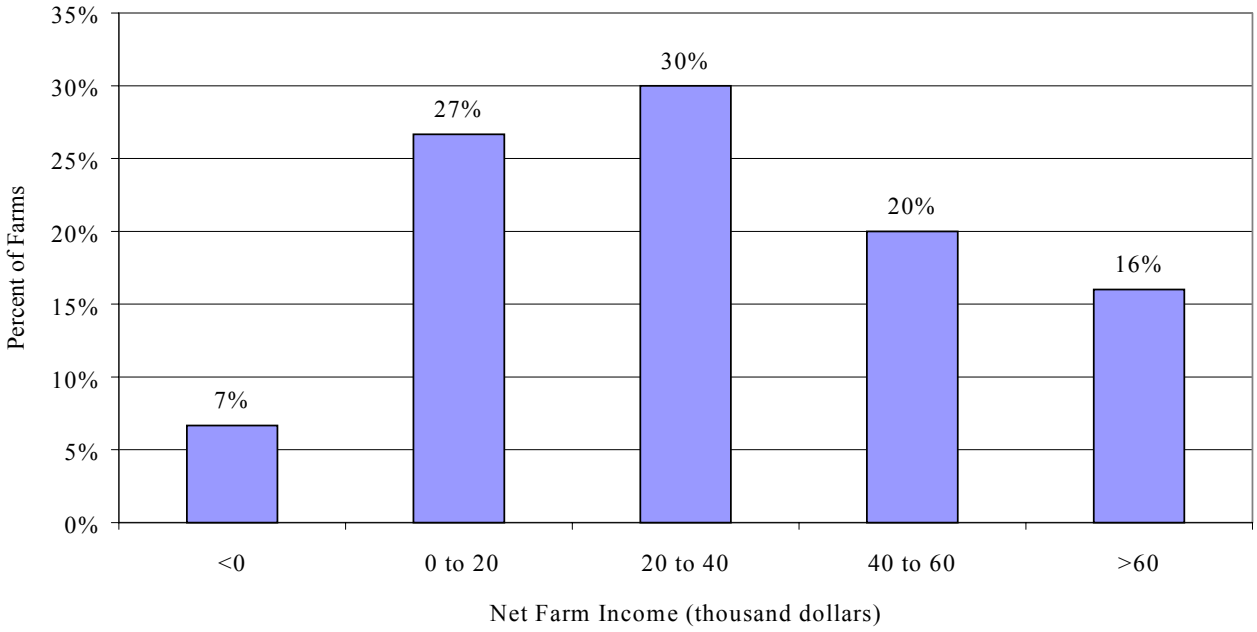
The chart below shows the relationship between net farm income per cow (with appreciation) and pounds of milk sold per cow. Generally, farms with a higher production per cow have higher profitability per cow.

NET FARM INCOME PER COW AND MILK PER COW
30 Intensive Grazing Farms, 2002



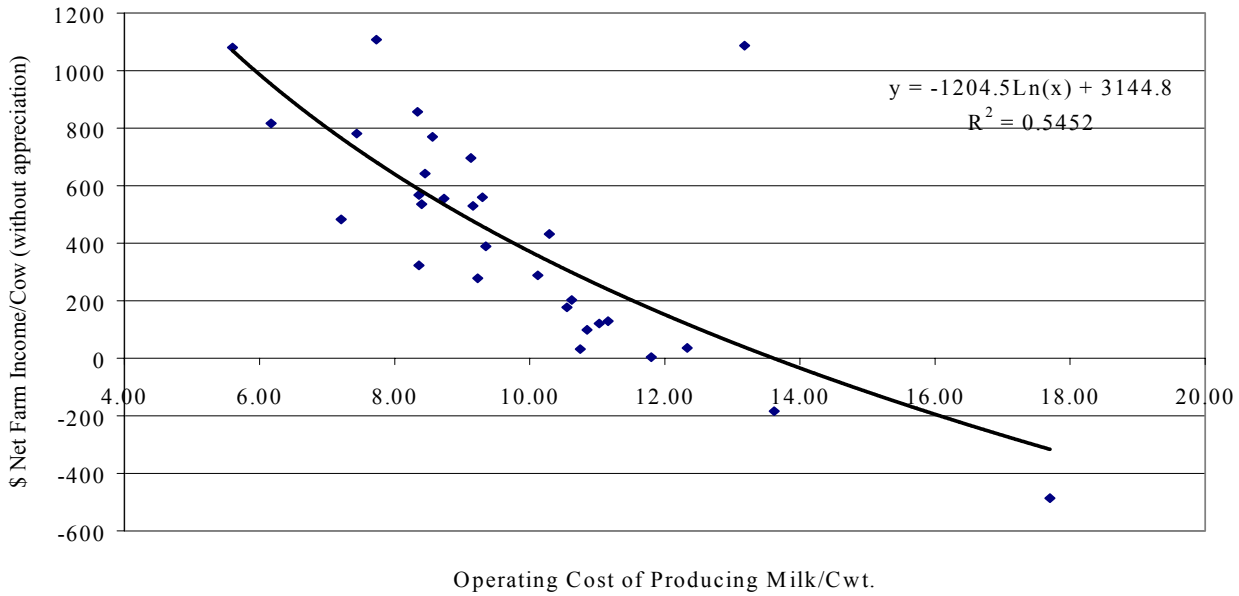
Net farm income without appreciation averaged $30,275 on these 30 farms in 2002. The range in net farm income without appreciation was from less than $-30,000 to more than $370,000. Net farm income was less than $20,000 on 34 percent of the farms, between $20,000 and $60,000 on 50 percent of the farms, while 16 percent showed net farm income of $60,000 or more.

DISTRIBUTION OF NET FARM INCOME WITHOUT APPRECIATION
30 Intensive Grazing Dairy Farms, 2002



The importance of cost control and its impact on farm profitability are illustrated in the chart below. As the operating cost of producing milk per hundreweight increased, net farm income per cow fell.

NET FARM INCOME/COW & OPERATING COST OF PRODUCING MILK/CWT.
30 Intensive Grazing Farms, 2002



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.

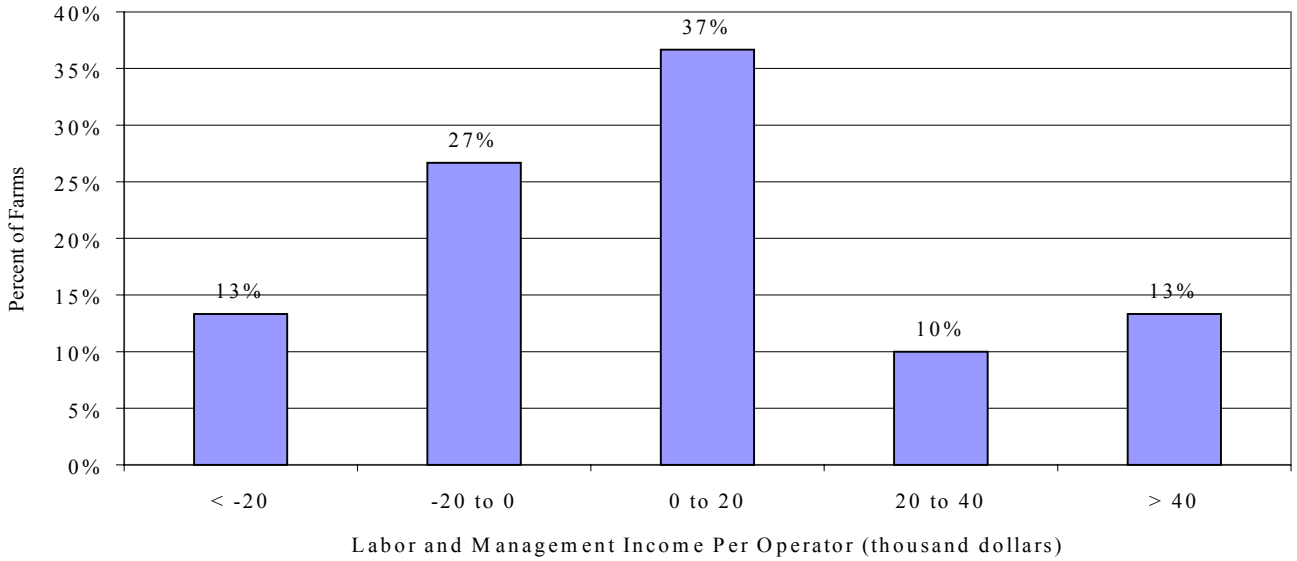
LABOR AND MANAGEMENT INCOME
Intensive Grazing Dairy Farms, 2002

Item	30 Grazing Dairy Farms[11]	10 Above Average Farms[11]	11 Below Average Farms[11]
Net farm income without appreciation	$ 30,275	$ 48,648	$ 26,734
Family labor unpaid @ $2,100 per month	- 9,030	- 8,190	- 9,030
Interest on average equity capital @ 5% real rate	- 18,167	- 17,827	- 23,201
Labor & Management Income per farm	$ 3,078	$ 22,631	$ -5,497
Labor & Management Income per Operator/Manager	$ 2,482	$ 20,027	$ -4,133
Labor & Management Income per Operator per Cow	$ 26	$ 286	$ -30

[11]See page 1 for a description of these groups of farms.

Labor and management income per operator averaged $2,482 on these 30 farms in 2002. The range in labor and management income per operator was from less than $-60,000 to more than $270,000. Returns to labor and management were less than $0 on 40 percent of the farms. Labor and management income per operator was between $0 and $20,000 on 37 percent of the farms while 23 percent showed labor and management incomes of $20,000 or more per operator.

DISTRIBUTION OF LABOR & MANAGEMENT INCOMES PER OPERATOR
30 Intensive Grazing Farms, 2002



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. A large percentage of farms fall near $0 to $20,000 with a considerable percentage less than zero. One comparison to make to the state distribution is the percentage of farms that were above $20,000 labor and management income per operator. For the intensive grazing farms, 23% of the farms had returns that were over $20,000, while for the 215 farms across the state, 18% had returns greater than $20,000 in 2002.

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

RETURN ON EQUITY CAPITAL AND RETURN ON TOTAL CAPITAL
Intensive Grazing Dairy Farms, 2002

Item	30 Grazing Dairy Farms[12]	10 Above Average Farms[12]	11 Below Average Farms[12]
Net farm income with appreciation	$ 35,636	$ 57,228	$ 28,201
Family labor unpaid @$2,100 per month	- 9,030	- 8,190	- 9,030
Value of operators' labor & management	- 30,617	- 29,900	- 37,000
Return on equity capital with appreciation	$ -4,011	$ 19,138	$ -17,829
Interest paid	+ 10,788	+ 5,733	+ 16,687
Return on total capital with appreciation	$ 6,777	$ 24,871	$ -1,142
Return on equity capital without appreciation	$ -9,372	$ 10,558	$ -19,296
Return on total capital without appreciation	$ 1,416	$ 16,291	$ -2,609
Rate of return on average equity capital:			
with appreciation	-1.1%	5.4%	-3.8%
without appreciation	-2.6%	3.0%	-4.2%
Rate of return on average total capital:			
with appreciation	1.2%	5.6%	-0.2%
without appreciation	0.3%	3.7%	-0.4%
Net farm income from operations ratio	0.12	0.21	0.09

[12]See page 1 for a description of these groups of farms.

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 2002, lease payments were discounted by 5.75 percent to obtain their present value.

Advanced government receipts are included as current liabilities. Government payments received in 2002 that are for participation in the 2003 program are the end year balance and payments received in 2001 for participation in the 2002 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.

2002 FARM BUSINESS & NONFARM BALANCE SHEET

30 Intensive Grazing Dairy Farms, 2002

Farm Assets	Jan. 1	Dec. 31	Farm Liabilities & Net Worth	Jan. 1	Dec. 31
Current			Current		
Farm cash, checking & savings	$ 5,449	$ 6,156	Accounts payable	$ 5,861	$ 8,884
			Operating debt	3,451	7,951
Accounts receivable	15,640	15,463	Short Term	1,399	825
Prepaid expenses	112	105	Advanced govt. receipts	0	0
Feed & supplies	35,842	33,673	Current Portion:		
			Intermediate	17,714	19,565
			Long Term	6,630	6,214
Total Current	$ 57,043	$ 55,397	Total Current	$ 35,055	$ 43,440
Intermediate			Intermediate		
Dairy cows:			Structured debt		
owned	$ 102,027	$ 102,781	1-10 years	$ 75,841	$ 69,031
leased	0	243	Financial lease		
Heifers	52,588	50,914	(cattle/machinery)	2,189	1,791
Bulls & other livestock	4,724	3,524	Farm Credit stock	1,088	1,114
Mach. & equip. owned	100,223	104,601	Total Intermediate	$ 79,118	$ 71,936
Mach. & equip. leased	2,189	1,548			
Farm Credit stock	1,088	1,114			
Other stock/certificate	6,908	7,562			
Total Intermediate	$ 269,747	$ 272,287			
			Long Term		
Long Term			Structured debt		
Land & buildings:			>10 years	$ 72,004	$ 75,317
owned	$ 216,955	$ 232,132	Financial lease		
leased	0	0	(structures)	0	0
Total Long Term	$ 216,955	$ 232,132	Total Long Term	$ 72,004	$ 75,317
			Total Farm Liab.	$ 186,177	$ 190,693
Total Farm Assets	$ 543,745	$ 559,816	FARM NET WORTH	$ 357,568	$ 369,123

Nonfarm Assets, Liabilities & Net Worth (Average of 22 farms reporting)

Assets	Jan. 1	Dec. 31	Liabilities & Net Worth	Jan. 1	Dec. 31
Personal cash, checking & savings	$ 10,004	$ 8,219	Nonfarm Liabilities	$ 7,071	$ 7,062
Cash value life insurance	9,641	9,977			
Nonfarm real estate	13,386	15,523			
Auto (personal share)	9,505	8,348			
Stocks & bonds	9,712	12,723			
Household furnishings	11,850	11,100			
All other nonfarm assets	5,256	5,438			
Total Nonfarm Assets	$ 69,354	$ 71,328	NONFARM NET WORTH	$ 62,283	$ 64,266

Farm & Nonfarm Assets, Liabilities, and Net Worth[13]	Jan. 1	Dec. 31
Total Assets	$ 613,099	$ 631,144
Total Liabilities	193,248	197,755
TOTAL FARM & NONFARM NET WORTH	$ 419,851	$ 433,389

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

The following condensed balance sheet, including deferred taxes, contains average data from only those farmers who elected to provide the additional information required to compute deferred taxes. Deferred taxes represent an estimate of the taxes that would be paid if the farm were sold at year end fair market values on the date of the balance sheet. Accuracy is dependent on the accuracy of the market values and the tax basis data provided. Any tax liability for assets other than livestock, machinery, land, buildings and nonfarm assets is excluded. It is assumed that all gain on purchased livestock and machinery is ordinary gain and that listed market values are net of selling costs. The effects of investment tax credit carryover and recapture, carryover of operating losses, alternative minimum taxes and other than average exemptions and deductions are excluded because they have only minor influence on the taxes of most farms. The dramatic impact of including deferred taxes is clear. Total farm liabilities were increased 55 percent on these 13 farms by including deferred taxes.

Deferred taxes on these farms totaled an average of $94,569, roughly one-third of the pretax net worth. Percent equity for the farm decreased from 66 percent to 48 percent when deferred taxes are included on these farms. When examining net worth, especially as a source of cash for retirement or other purposes, deferred taxes become an important consideration. Deferred taxes in this calculation specify that all assets were sold during one tax year. Therefore, tax management strategies such as making sales in more than one year or installment sales warrant careful consideration to reduce income tax liabilities.

CONDENSED BALANCE SHEET INCLUDING DEFERRED TAXES
December 31, 2002
13 Intensive Grazing Dairy Farms, 2002

Assets			Liabilities & Net Worth		
			Current debts & payables	$	38,786
			Current deferred taxes		9,904
Total Current Assets	$	47,538	Total Current Liabilities	$	48,690
			Intermediate debts & leases	$	77,850
			Intermediate deferred taxes		48,483
Total Inter. Assets	$	220,459	Total Intermediate Liabilities	$	126,333
			Long term debts & leases	$	56,445
			Long term deferred taxes		36,182
Total Long Term Assets	$	245,881	Total Long Term Liabilities	$	92,627
TOTAL FARM ASSETS	$	513,878	TOTAL FARM LIABILITIES	$	267,650
			Farm Net Worth	$	246,228
			Percent Equity (Farm)		48%
			Nonfarm debts	$	0
			Nonfarm deferred taxes		3,915
Total Nonfarm Assets	$	42,710	Total Nonfarm Liabilities	$	3,915
TOTAL ASSETS	$	556,588	TOTAL LIABILITIES	$	271,565
			Total Net Worth	$	285,023
			Percent Equity (Total)		51%

Balance sheet analysis involves examination of relative asset and debt levels for the business. Percent equity is calculated by dividing end of year net worth by end of year assets and multiplying by 100. The debt to asset ratio is compiled by dividing liabilities by assets. Low debt to asset ratios reflect business solvency and the potential capacity to borrow. The leverage ratio is the dollars of debt per dollar of equity, computed by dividing total farm liabilities by farm net worth. Debt levels per productive unit represent old standards that are still useful if used with measures of cash flow and repayment ability. A current ratio that has been falling or is less than 1.5 warrants additional evaluation. An adequate amount of working capital will be related to the size of the farm business.

BALANCE SHEET ANALYSIS
Intensive Grazing Dairy Farms, 2002

Item	30 Grazing Dairy Farms[14]	10 Above Average Farms[14]	11 Below Average Farms[14]
Financial Ratios - Farm:			
Percent equity	66%	80%	63%
Debt/asset ratio: total	0.34	0.20	0.37
long-term	0.32	0.15	0.43
intermediate/current	0.35	0.24	0.33
Leverage Ratio	0.52	0.26	0.60
Current Ratio	1.28	2.15	1.22
Working Capital: $11,957, As % of Expenses	5%	($25,509) 14%	($13,533) 5%
Farm Debt Analysis:			
Accounts payable as % of total debt	5%	4%	3%
Long-term liabilities as a % of total debt	39%	27%	48%
Current & inter. liabilities as a % of total debt	61%	73%	52%
Cost of term debt (weighted average)	5.3%	6.6%	3.9%

	30 Grazing Dairy Farms		10 Above Average Farms		11 Below Average Farms	
Farm Debt Levels:	Per Cow	Per Tillable Acre Owned	Per Cow	Per Tillable Acre Owned	Per Cow	Per Tillable Acre Owned
Total farm debt	$ 1,966	$ 1,616	$ 1,344	$ 1,069	$ 2,026	$ 1,605
Long-term debt	776	638	364	289	977	774
Intermediate & long term	1,518	1,248	1,027	817	1,570	1,243
Intermediate & current debt	1,189	978	980	780	1,049	831

[14] See page 1 for a description of these groups of farms.

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
30 Intensive Grazing Dairy Farms, 2002

Item	Real Estate	Machinery & Equipment
Value beginning of year	$ 216,955	$ 100,223
Purchases	$ 13,816[15]	$ 16,419
Gift & inheritance	+ 0	+ 0
Lost capital	- 2,755	
Sales	- 0	- 1,144
Depreciation	- 6,860	- 12,728
Net investment	= 4,202	= 2,546
Appreciation	+ 10,975	+ 1,832
Value end of year	$ 232,132	$ 104,601

[15] $2,907 land and $10,909 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, 2002

Item	30 Grazing Dairy Farms[16]		10 Above Average Farms[16]		11 Below Average Farms[16]	
Beginning of year farm net worth		$ 357,568		$ 345,477		$ 462,350
Net farm income w/o appreciation	$ 30,275		$ 48,648		$ 26,734	
+Nonfarm cash income	+ 6,708		+ 3,654		+ 8,552	
-Personal withdrawals & family expenditures excluding nonfarm borrowings	- 33,178		- 36,920		- 39,817	
RETAINED EARNINGS		+$ 3,805		+$ 15,382		+$ -4,531
Nonfarm noncash transfers to farm	$ 0		$ 0		$ 0	
+Cash used in business from nonfarm capital	+ 6,404		+ 0		+ 7,940	
-Note or mortgage from farm real estate sold (nonfarm)	- 0		- 0		- 0	
CONTRIBUTED/ WITHDRAWN CAPITAL		+$ 6,404		+$ 0		+$ 7,940
Appreciation	$ 5,361		$ 8,580		$ 1,467	
-Lost capital	- 2,755		- 888		- 2,161	
CHANGE IN VALUATION EQUITY		+$ 2,606		+$ 7,692		+$ -694
IMBALANCE/ERROR		- 1,260		- 942		- -631
End of year net worth[17]		=$369,123		=$367,609		=$465,696
Change in Net Worth						
Without appreciation		$ 6,194		$ 13,552		$ 1,879
With appreciation		$ 11,555		$ 22,132		$ 3,346

[16]See page 1 for a description of these groups of farms.
[17]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
30 Intensive Grazing Dairy Farms, 2002

Item			Average	
Cash Flow from Operating Activities				
	Cash farm receipts	$ 247,645		
-	Cash farm expenses	196,523		
=	Net cash farm income		$ 51,122	
	Personal withdrawals & family expenses including nonfarm debt payments	$ 33,679		
-	Nonfarm income	6,708		
-	Net cash withdrawals from the farm		$ 26,971	
=	Net Provided by Operating Activities			$ 24,151
Cash Flow From Investing Activities				
	Sale of assets: machinery	$ 1,144		
	+ real estate	0		
	+ other stock & cert.	739		
=	Total asset sales		$ 1,883	
	Capital purchases: expansion livestock	$ 1,040		
	+ machinery	16,419		
	+ real estate	13,816		
	+ other stock& cert.	1,564		
-	Total invested in farm assets		$ 32,839	
=	Net Provided by Investment Activities			$ -30,956
Cash Flow From Financing Activities				
	Money borrowed (intermediate & long term)	$ 23,826		
+	Money borrowed (short term)	704		
+	Increase in operating debt	4,501		
+	Cash from nonfarm capital used in business	6,404		
+	Money borrowed - nonfarm	500		
=	Cash inflow from financing		$ 35,935	
	Principal payments (intermediate & long term)	$ 27,888		
+	Principal payments (short term)	1,278		
+	Decrease in operating debt	0		
-	Cash outflow for financing		$ 27,166	
=	Net Provided by Financing Activities			$ 8,769
Cash Flow From Reserves				
	Beginning farm cash, checking & savings		$ 5,449	
-	Ending farm cash, checking & savings		6,156	
=	Net Provided from Reserves			$ -707
Imbalance (error)				$ 1,257

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 2003. The cash flow projection worksheet on the next page can be used to estimate repayment ability, which can then be compared to planned 2003 debt payments shown below.

FARM DEBT PAYMENTS PLANNED
Same Intensive Grazing Dairy Farms, 2001 & 2002

	Same 29 Grazing			Same 10 Above Average Farms			Same 10 Below Average Farms		
	2002 Payments		Planned	2002 Payments		Planned	2002 Payments		Planned
Debt Payments	Planned	Made	2003	Planned	Made	2003	Planned	Made	2003
Long term	$ 11,455	$ 11,028	$ 10,327	$ 3,956	$ 5,356	$ 5,056	$ 21,326	$ 18,315	$ 15,940
Intermediate term	22,757	23,927	23,177	17,674	15,877	13,577	28,598	26,929	35,788
Short term	929	945	640	0	0	0	751	810	392
Operating (net reduction)	1,146	0	3,098	600	0	124	480	0	7,460
Accounts Pay. (net reduction)	103	0	155	0	0	380	0	0	0
Total	$ 36,390	$ 35,900	$37,397	$ 22,230	$ 21,233	$ 19,137	$ 51,155	$46,054	$ 59,580
Per cow	$ 387	$ 382		$ 318	$ 303		$ 365	$ 329	
Per cwt. 2002 milk	$ 2.33	$ 2.30		$ 1.61	$ 1.53		$ 2.55	$ 2.30	
Percent of total 2002 farm receipts	15%	14%		10%	9%		16%	15%	
Percent of 2002 milk receipts	18%	18%		12%	12%		20%	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 2002 (as of December 31, 2001) that could have been made with the amount available for debt service in 2002. Farmers who did not participate in DFBS in 2001 have their 2002 coverage ratios based on planned debt payments for 2003.

COVERAGE RATIOS
Same Intensive Grazing Dairy Farms, 2001 & 2002

Item	Average	Item	Average
Same 29 Grazing Dairy Farms, 2001 & 2002			
(A)=Amount Available for Debt Service	$ 34,234	(A')=Repayment Capacity	$ 33,201
(B)=Debt Payments Planned for 2002	$ 36,390	(B)=Debt Payments Planned for 2002	$ 36,390
(A/B)=Cash Flow Coverage Ratio for 2002	0.94	(A'/B)=Debt Coverage Ratio for 2002	0.91
Same 10 Above Average Farms, 2001 & 2002			
(A)=Amount Available for Debt Service	$ 33,737	(A')=Repayment Capacity	$ 39,486
(B)=Debt Payments Planned for 2002	$ 22,230	(B)=Debt Payments Planned for 2002	$ 22,230
(A/B)=Cash Flow Coverage Ratio for 2002	1.52	(A'/B)=Debt Coverage Ratio for 2002	1.78
Same 10 Below Average Farms, 2001 & 2002			
(A)=Amount Available for Debt Service	$ 46,777	(A')=Repayment Capacity	$ 35,808
(B)=Debt Payments Planned for 2002	$ 51,155	(B)=Debt Payments Planned for 2002	$ 51,155
(A/B)=Cash Flow Coverage Ratio for 2002	0.91	(A'/B)=Debt Coverage Ratio for 2002	0.70

ANNUAL CASH FLOW WORKSHEET

Intensive Grazing Dairy Farms, 2002

Item	30 Grazing Dairy Farms		10 Above Average Farms		11 Below Average Farms	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average no. of cows	94		70		136	
Total cwt. of milk sold		15,687		13,848		19,891
Accrual Oper. Receipts						
Milk	$ 2,160	$ 12.94	$ 2,589	$ 13.09	$ 1,884	$ 12.88
Dairy cattle	169	1.01	224	1.13	107	0.73
Dairy calves	43	0.26	39	0.20	50	0.34
Other livestock	14	0.08	37	0.19	10	0.07
Crops	-6	-0.03	54	0.27	-25	-0.17
Misc. Receipts	286	1.72	396	2.00	230	1.57
Total	$ 2,667	$ 15.98	$ 3,339	$ 16.88	$ 2,255	$ 15.42
Accrual Operating Expenses						
Hired labor	$ 232	$ 1.39	$ 260	$ 1.32	$ 195	$ 1.33
Dairy grain & concentrate	608	3.64	667	3.37	549	3.75
Dairy roughage	96	0.57	43	0.22	88	0.60
Nondairy feed	2	0.01	4	0.02	1	0.01
Mach. hire, rent & lease	63	0.38	29	0.15	56	0.38
Mach. repair & vehicle expense	137	0.82	225	1.14	87	0.60
Fuel, oil & grease	48	0.29	75	0.38	35	0.24
Replacement livestock	12	0.07	3	0.01	21	0.14
Breeding	33	0.20	44	0.22	24	0.17
Vet & medicine	57	0.34	47	0.24	56	0.38
Milk marketing	138	0.83	184	0.93	109	0.74
Bedding	15	0.09	10	0.05	17	0.12
Milking supplies	54	0.32	83	0.42	41	0.28
Cattle lease	2	0.01	2	0.01	2	0.01
Custom boarding	37	0.22	17	0.09	47	0.32
bST expense	13	0.08	21	0.10	10	0.07
Other livestock expense	44	0.26	40	0.20	42	0.29
Fertilizer & lime	78	0.47	57	0.29	105	0.72
Seeds & plants	27	0.16	34	0.17	25	0.17
Spray & other crop expense	24	0.14	30	0.15	15	0.11
Land, bldg., fence repair	44	0.26	58	0.29	27	0.18
Taxes	50	0.30	62	0.31	39	0.27
Real estate rent & lease	53	0.32	102	0.52	32	0.22
Insurance	41	0.24	67	0.34	30	0.20
Utilities	64	0.39	88	0.44	45	0.31
Miscellaneous	38	0.22	50	0.25	35	0.24
Total Less Interest Paid	$ 2,010	$ 12.05	$ 2,300	$ 11.63	$ 1,732	$ 11.84
Net Accrual Operating Income	Total		Total		Total	
(without interest paid)	$ 61,691		$ 72,753		$ 71,094	
- Change in livestock & crop invent.[18]	3,185		9,365		-7,589	
- Change in accounts receivable	-177		663		-254	
- Change in feed & supply inventory[19]	-204		-2,790		1,562	
+ Change in accounts payable[20]	2,991		1,489		2,723	
NET CASH FLOW	$ 61,878		$ 67,004		$ 80,098	
- Net family withdrawals	- 26,471		- 33,267		- 31,265	
Available for Farm	$ 35,407		$ 33,737		$ 48,833	
- Farm debt payments	- 37,543		- 21,234		- 49,614	
Available for Farm Investment	$ -2,136		$ 12,503		$ -781	
- Capital purchases	$ 32,839		$ 42,526		$ 30,617	
Additional Capital Needed	$ 34,975		$ 30,023		$ 31,398	

[18]Includes change in advance government receipts. [19]Includes change in prepaid expenses. [20]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, 2002

Item	30 Grazing Dairy Farms			10 Above Average Farms			11 Below Average Farms		
Land	Owned	Rented	Total	Owned	Rented	Total	Owned	Rented	Total
Tillable	118	125	243	88	144	232	173	121	293
Nontillable	33	16	50	31	16	47	43	13	55
Other nontill.	78	23	101	74	38	112	105	1	106
Total	230	164	394	193	198	391	321	134	455
Crop Yields	Farms	Acres[2] [1]	Prod/Acre	Farms	Acres[2] [1]	Prod/Acre	Farms	Acres[2] [1]	Prod/Acre
Hay crop	27	132	2.2 tn DM	10	122	2.4 tn DM	10	142	2.4 tn DM
Corn silage	15	45	12.4 tn	6	40	14.7 tn	5	49	12.2 tn
			4.4 tn DM			5.1 tn DM			4.4 tn DM
Other forage	2	27	1.7 tn DM	0	0	0.0 tn DM	2	27	1.7 tn DM
Total forage	27	159	2.6 tn DM	10	146	2.9 tn DM	10	172	2.7 tn DM
Corn grain	5	34	95 bu	2	16	84 bu	1	50	92 bu
Oats	1	30	40 bu	1	30	40 bu	0	0	0 bu
Wheat	1	50	49 bu	1	50	49 bu	0	0	0 bu
Other crops	5	9		2	3		2	15	
Tillable pasture	25	101		8	91		9	151	
Idle	7	24		2	6		3	21	
Total Tillable Acres	30	243		10	232		11	293	

[21]This column represents the average acreage for the farms producing that crop. For the 30 New York dairy farms, average acreages including those farms not producing were hay crop 119, corn silage 22, corn grain 6, oats 1, wheat 2, tillable pasture 84, and idle 6.

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, 2002

Item	30 Grazing Dairy Farms[22]	10 Above Average Farms[22]	11 Below Average Farms[22]
Total tillable acres per cow	2.59	3.31	2.15
Total forage acres per cow	1.52	2.09	1.15
Harvested forage dry matter, tons per cow	3.89	5.96	3.06

[22]See page 1 for a description of these groups of farms.

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. Intensive grazing was used by all farms reported in the below tables.

CROP RELATED ACCRUAL EXPENSES

Intensive Grazing Dairy Farms Reporting, 2002

Item	Total Per Till. Acre	All Corn Per Acre	Corn Silage Per Ton DM	Corn Grain Per Dry Sh. Bu.	Hay Crop Per Acre	Hay Crop Per Ton DM	Pasture Per Till Acre	Pasture Per Total Acre
All Grazing Farms								
No. of farms reporting	30	5			7		3	
Ave. number of acres	243	74			201		48	168
Fert. & lime	$ 30.30	$ 47.04	$ 11.53	$ 0.57	$ 14.27	$ 10.86	$ 26.13	$ 7.46
Seeds & plants	10.26	41.80	10.24	0.51	5.94	4.52	2.85	0.82
Spray & other	9.24	40.80	10.00	0.50	2.74	2.08	0.00	0.00
TOTAL	$ 49.80	$ 129.64	$ 31.77	$ 1.58	$ 22.95	$ 17.46	$ 28.98	$ 8.28
Above Average Grazing Farms								
No. of farms reporting	10	2			3		--NONE REPORTED--	
Ave. number of acres	232	42			131			
Fert. & lime	$ 17.11	$ 51.83	$ 10.70	$ 0.69	$ 23.24	$ 10.29		
Seeds & plants	10.15	29.79	6.15	0.40	7.95	3.52		
Spray & other	9.03	33.38	6.89	0.44	5.18	2.29		
TOTAL	$ 36.29	$ 115.00	$ 23.74	$ 1.53	$ 36.37	$ 16.10		
Below Average Grazing Farms								
No. of farms Reporting	11	2			2		2	
Ave. number of acres	293	93			227		45	175
Fert. & lime	$ 48.62	$ 60.82	$ 16.88	$ 0.66	$ 6.12	$ 4.45	$ 24.18	$ 6.22
Seeds & plants	11.74	56.82	15.77	0.62	6.21	4.52	0.00	0.00
Spray & other	7.18	41.88	11.62	0.46	3.55	2.58	0.00	0.00
TOTAL	$ 67.54	$ 159.52	$ 44.27	1.74	$ 15.88	$ 11.55	$ 24.18	$ 6.22

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, 2002

Machinery Expense	30 Grazing Dairy[23] Total Expenses	30 Grazing Dairy[23] Per Till. Acre	10 Above Average Farms[23] Total Expenses	10 Above Average Farms[23] Per Till. Acre	11 Below Average Farms[23] Total Expenses	11 Below Average Farms[23] Per Till. Acre
Fuel, oil & grease	$ 4,535	$ 18.66	$ 5,231	$ 22.55	$ 4,717	$ 16.10
Mach. repair & vehicle exp.	12,875	52.98	15,728	67.79	11,861	40.48
Machine hire, rent & lease	5,924	24.38	2,051	8.84	7,559	25.80
Interest (5%)	5,214	21.46	5,636	24.29	6,066	20.70
Depreciation	12,728	52.38	13,150	56.68	15,984	54.55
Total	$ 41,276	$ 169.86	$ 41,796	$ 180.16	$ 46,187	$ 157.63

[23] See page 1 for a description of these groups of farms.

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 18 through 21.

DAIRY HERD INVENTORY

Intensive Grazing Dairy Farms, 2002

	Dairy Cows		Bred Heifers		Open Heifers		Calves	
Item	No.	Value	No.	Value	No.	Value	No.	Value
30 Grazing Dairy Farms[24]								
Beg. year (owned)	89	$ 102,027	26	$ 28,677	27	$ 18,944	14	$ 4,966
+ Change w/o apprec.		6,243		-2,125		2,158		185
+ Appreciation		-5,489		-750		-1,173		31
End year (owned)	95	$ 102,781	25	$ 25,802	31	$ 19,929	14	$ 5,182
End including leased	97							
Average number	94		68	(all age groups)				
10 Above Average Dairy Farms[24]								
Beg. year (owned)	67	$ 74,620	22	$ 23,032	16	$ 10,583	14	$ 4,448
+ Change w/o apprec.		1,250		560		3,182		-162
+ Appreciation		1,280		-2,014		-982		238
End year (owned)	69	$ 77,150	23	$ 21,578	21	$ 12,783	13	$ 4,524
End including leased	70							
Average number	70		55	(all age groups)				
11 Below Average Dairy Farms[24]								
Beg. year (owned)	128	$ 148,564	38	$ 44,127	37	$ 24,000	12	$ 4,409
+ Change w/o apprec.		7,863		-6,595		1,691		514
+ Appreciation		-8,586		441		54		172
End year (owned)	134	$ 147,841	34	$ 37,973	41	$ 25,745	13	$ 5,095
End including leased	137							
Average number	136		87	(all age groups)				

[24] See page 1 for a description of these groups of farms.

Total milk sold and milk sold per cow are extremely valuable measures of size and productivity, respectively, on the dairy farm. These measures of milk output are based on pounds of milk marketed during the year.

MILK PRODUCTION

Intensive Grazing Dairy Farms, 2002

Item	30 Grazing Dairy Farms[25]	10 Above Average Dairy Farms[25]	11 Below Average Dairy Farms[25]
Total milk sold, lbs.	1,568,703	1,384,775	1,989,141
Milk sold per cow, lbs.	16,618	19,868	14,626
Average milk plant test, percent butterfat	3.79%	3.85%	3.72%

[25] See page 1 for a description of these groups of farms.

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

ANIMALS LEAVING THE HERD

Intensive Grazing Dairy Farms, 2002

	30 Grazing Dairy Farms		10 Above Average Dairy Farms		11 Below Average Dairy Farms	
Item	Number	Percent[26]	Number	Percent[26]	Number	Percent[26]
Cows sold for beef	19	20.2	16	22.9	26	19.1
Cows sold for dairy	2	2.1	2	2.9	3	2.2
Cows died	4	4.3	2	2.9	8	5.9
Culling rate[27]		24.5		25.7		25.0

[26]Percent of average number of cows in the herd. [27]Cows sold for beef plus cows died.

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

ACCRUAL RECEIPTS FROM DAIRY, COSTS OF PRODUCING MILK, AND PROFITABILITY

Intensive Grazing Dairy Farms, 2002

Item	30 Grazing Dairy Farms[28]		10 Above Average Dairy Farms[28]		11 Below Average Dairy Farms[28]	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Accrual Cost of Producing Milk						
Operating costs	$ 1,629	$ 9.76	$ 1,632	$ 8.25	$ 1,496	$ 10.23
Purchased inputs costs	$ 1,838	$ 11.01	$ 1,894	$ 9.58	$ 1,688	$ 11.54
Total Costs	$ 2,453	$ 14.70	$ 2,693	$ 13.61	$ 2,197	$ 15.02
Accrual Receipts From Milk	$ 2,160	$ 12.94	$ 2,589	$ 13.09	$ 1,884	$ 12.88
Net milk receipts	$ 2,022	$ 12.11	$ 2,406	$ 12.16	$ 1,776	$ 12.14
Net Farm Income without Apprec.	$ 322	$ 1.93	$ 695	$ 3.51	$ 197	$ 1.34
Net Farm Income with Apprec.	$ 379	$ 2.27	$ 818	$ 4.13	$ 207	$ 1.42

[28] See page 1 for a description of these groups of farms.

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, 2002

Item	30 Grazing Dairy Farms		10 Above Average Dairy Farms		11 Below Average Dairy Farms	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Purchased dairy grain & concentrate	$ 608	$ 3.64	$ 667	$ 3.37	$ 549	$ 3.75
Purchased dairy roughage	96	0.57	43	0.22	88	0.60
Total Purchased Dairy Feed	$ 703	$ 4.21	$ 711	$ 3.59	$ 636	$ 4.35
Purchased grain & conc. as % of milk receipts	28%		26%		29%	
Purchased feed & crop exp.	$ 832	$ 4.99	$ 831	$ 4.20	$ 782	$ 5.35
Purchased feed & crop exp. as % of milk receipts	39%		32%		41%	
Breeding	$ 33	$ 0.20	$ 44	$ 0.22	$ 24	$ 0.17
Veterinary & medicine	57	0.34	47	0.24	56	0.38
Milk marketing	138	0.83	184	0.93	109	0.74
Bedding	15	0.09	10	0.05	17	0.12
Milking supplies	54	0.32	83	0.42	41	0.28
Cattle lease	2	0.01	2	0.01	2	0.01
Custom boarding	37	0.22	17	0.09	47	0.32
bST expense	13	0.08	21	0.10	10	0.07
Other livestock expense	44	0.26	40	0.20	42	0.29

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, 2002

Item	Per Worker	Per Cow	Per Tillable Acre	Per Tillable Acre Owned
30 Grazing Dairy Farms[29]				
Farm capital	$ 213,043	$ 5,870	$ 2,271	$ 4,676
Real estate		2,389		1,903
Machinery & equipment	40,263	1,109	429	
Ratios:				
Asset Turnover Ratio	Operating Expense	Interest Expense		Depreciation Expense
0.46	0.76	0.04		0.08
10 Above Average Dairy Farms[29]				
Farm capital	$ 173,075	$ 6,330	$ 1,910	$ 5,035
Real estate		2,295		1,826
Machinery & equipment	44,033	1,610	486	
Ratios:				
Asset Turnover Ratio	Operating Expense	Interest Expense		Depreciation Expense
0.55	0.69	0.02		0.08
11 Below Average Dairy Farms[29]				
Farm capital	$ 285,048	$ 5,491	$ 2,549	$ 4,317
Real estate		2,280		1,793
Machinery & equipment	46,306	892	414	
Ratios:				
Asset Turnover Ratio	Operating Expense	Interest Expense		Depreciation Expense
0.41	0.77	0.05		0.09

[29] See page 1 for a description of these groups of farms.

Capital and Labor Efficiency Analysis (continued)

LABOR FORCE INVENTORY AND ANALYSIS
Intensive Grazing Dairy Farms, 2002

Labor Force	Months	Age	Years of Educ.	Value of Labor & Mgmt.
30 Grazing Dairy Farms				
Operator number 1	13.0	47	14	$ 26,217
Operator number 2	2.9	44	14	4,400
Family paid	3.1			
Family unpaid	4.3			
Hired	7.8			
Total	31.1	/ 12 = 2.59 Worker Equivalent		
		1.24 Operator/Manager Equivalent		
10 Above Average Dairy Farms				
Total Labor Force	30.7	/ 12 = 2.56 Worker Equivalent		
Operator's Labor		1.13 Operator/Manager Equivalent		
11 Below Average Dairy Farms				
Total Labor Force	31.4	/ 12 = 2.62 Worker Equivalent		
Operator's Labor		1.33 Operator/Manager Equivalent		

Labor Efficiency	30 Grazing Dairy Farms Total	30 Grazing Dairy Farms Per Worker	10 Above Average Dairy Farms Total	10 Above Average Dairy Farms Per Worker	11 Below Average Dairy Farms Total	11 Below Average Dairy Farms Per Worker
Cows, average number	94	36	70	27	136	52
Milk sold, pounds	1,568,703	605,677	1,384,775	540,928	1,989,141	759,214
Tillable acres	243	94	232	91	293	112
Work units	926	358	712	278	1,311	500

Labor Costs	30 Grazing Dairy Farms Per Cow	30 Grazing Dairy Farms Per Cwt.	10 Above Average Dairy Farms Per Cow	10 Above Average Dairy Farms Per Cwt.	11 Below Average Dairy Farms Per Cow	11 Below Average Dairy Farms Per Cwt.
Value of operator(s) labor ($2,100/mo.)	$ 355	$ 2.13	$ 495	$ 2.50	$ 247	$ 1.69
Family unpaid ($2,100/mo.)	96	0.58	117	0.59	66	0.45
Hired	232	1.39	260	1.32	195	1.33
Total Labor	$ 683	$ 4.09	$ 872	$ 4.41	$ 509	$ 3.48
Machinery Cost	$ 439	$ 2.63	$ 597	$ 3.02	$ 340	$ 2.32
Total Labor & Mach.	$ 1,122	$ 6.73	$ 1,469	$ 7.43	$ 848	$ 5.80
Hired labor expense per hired worker equivalent	$ 24,009		$ 21,016		$ 28,422	
Hired labor expense as % of milk sales	10.7%		10.0%		10.4%	

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, 2001 & 2002[30]

	Same 29 Grazing Dairy Farms		Same 10 Above Average Dairy Farms		Same 10 Below Average Dairy Farms	
Selected Factors	2001	2002	2001	2002	2001	2002
Size of Business						
Average number of cows	87	94	67	70	127	140
Average number of heifers	65	68	52	55	85	88
Milk sold, lbs.	1,403,207	1,558,796	1,315,583	1,384,775	1,743,955	2,002,453
Worker equivalent	2.44	2.60	2.36	2.56	2.51	2.65
Total tillable acres	239	244	222	232	310	303
Rates of Production						
Milk sold per cow, lbs.	16,091	16,522	19,694	19,868	13,689	14,303
Hay DM per acre, tons	2.5	2.1	2.4	2.4	3.1	2.3
Corn silage per acre, tons	14.4	12.1	17.0	14.7	13.0	11.1
Labor Efficiency						
Cows per worker	36	36	28	27	51	53
Milk sold/worker, lbs.	575,085	599,537	557,450	540,928	694,803	755,643
Cost Control						
Grain & conc. purchased as % of milk sales	22%	28%	23%	26%	20%	30%
Dairy feed & crop exp. per cwt. milk	$ 4.98	$ 5.03	$ 4.62	$ 4.20	$ 5.01	$ 5.47
Labor & mach. costs/cow	$ 1,152	$ 1,132	$ 1,482	$ 1,469	$ 869	$ 843
Operating cost of producing cwt. of milk	$ 11.28	$ 9.74	$ 10.59	$ 8.25	$ 10.70	$ 10.22
Capital Efficiency[31]						
Farm capital per cow	$ 5,822	$ 5,873	$ 6,066	$ 6,330	$ 5,628	$ 5,480
Mach. & equip. per cow	$ 1,119	$ 1,116	$ 1,459	$ 1,610	$ 980	$ 893
Asset turnover ratio	0.57	0.46	0.62	0.55	0.55	0.41
Profitability						
Net farm income w/o apprec.	$ 47,553	$ 29,887	$ 54,362	$ 48,648	$ 68,813	$ 25,257
Net farm income w/apprec.	$ 73,666	$ 35,311	$ 69,786	$ 57,228	$ 115,431	$ 26,521
Labor & mgt. income per operator/manager	$ 19,305	$ 2,034	$ 24,924	$ 20,027	$ 30,705	$ -5,463
Rate of return on equity capital w/appreciation	10.9%	-1.1%	9.4%	5.41%	16.4%	-4.0%
Rate of return on all capital w/appreciation	9.4%	1.1%	9.1%	5.6%	12.6%	-0.4%
Financial Summary						
Farm net worth, end year	$ 360,641	$ 371,641	$ 344,028	$ 367,609	$ 481,003	$ 482,658
Debt to asset ratio	0.34	0.34	0.19	0.20	0.38	0.37
Farm debt per cow	$ 2,070	$ 1,949	$ 1,177	$ 1,344	$ 2,266	$ 1,982

[30]Farms participating both years.
[31]Average for the year.

RECEIPTS AND EXPENSES PER COW AND PER CWT.
Same 29 Intensive Grazing Dairy Farms, 2001 & 2002

	2001		2002	
Item	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average Number of Cows	87		94	
Cwt. Of Milk Sold		14,032		15,588
ACCRUAL OPERATING RECEIPTS				
Milk	$ 2,604	$ 16.14	$ 2,145	$ 12.93
Dairy cattle	200	1.24	176	1.06
Dairy calves	44	0.27	41	0.25
Other livestock	53	0.33	15	0.09
Crops	16	0.10	-5	-0.03
Miscellaneous receipts	88	0.55	288	1.74
Total Receipts	$ 3,005	$ 18.63	$ 2,659	$ 16.04
ACCRUAL OPERATING EXPENSES				
Hired labor	$ 233	$ 1.44	$ 234	$ 1.41
Dairy grain & concentrate	574	3.56	608	3.66
Dairy roughage	60	0.56	99	0.60
Nondairy feed	1	0.01	2	0.01
Machine hire/rent/lease	65	0.40	65	0.39
Mach. repair & vehicle exp.	141	0.87	137	0.82
Fuel, oil & grease	58	0.36	47	0.28
Replacement livestock	28	0.17	13	0.08
Breeding	37	0.23	33	0.20
Veterinary & medicine	62	0.38	58	0.35
Milk marketing	135	0.83	140	0.85
Bedding	13	0.08	16	0.10
Milking supplies	65	0.41	47	0.28
Cattle lease	0	0.00	2	0.01
Custom boarding	37	0.23	39	0.23
bST expense	12	0.07	12	0.07
Other livestock expense	41	0.26	40	0.24
Fertilizer & lime	88	0.55	78	0.47
Seeds & plants	29	0.18	26	0.16
Spray/other crop expense	22	0.14	23	0.14
Land, building, fence repair	67	0.42	44	0.27
Taxes	47	0.29	51	0.31
Real estate rent/lease	60	0.37	55	0.33
Insurance	41	0.25	40	0.24
Utilities	67	0.42	63	0.38
Interest paid	128	0.79	110	0.66
Miscellaneous	40	0.25	38	0.23
Total Operating Expenses	$ 2,181	$ 13.53	$ 2,119	$ 12.78
Expansion Livestock	38	0.24	11	0.07
Machinery Depreciation	153	0.95	137	0.83
Real Estate Depreciation	85	0.53	74	0.45
Total Expenses	$ 2,458	$ 15.24	$ 2,341	$ 14.12
Net Farm Income Without Appreciation	$ 547	$ 3.39	$ 318	$ 1.92

RECEIPTS AND EXPENSES PER COW AND PER CWT.

Same 10 Above Average Intensive Grazing Dairy Farms, 2001 & 2002

	2001		2002	
Item	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average Number of Cows	67		70	
Cwt. Of Milk Sold		13,156		13,848
ACCRUAL OPERATING RECEIPTS				
Milk	$ 3,161	$ 16.10	$ 2,589	$ 13.09
Dairy cattle	188	0.96	224	1.13
Dairy calves	43	0.22	39	0.20
Other livestock	24	0.12	37	0.19
Crops	-1	-0.01	54	0.27
Miscellaneous receipts	112	0.57	396	2.00
Total Receipts	$ 3,527	$ 17.96	$ 3,339	$ 16.88
ACCRUAL OPERATING EXPENSES				
Hired labor	$ 232	$ 1.18	$ 260	$ 1.32
Dairy grain & concentrate	715	3.64	667	3.37
Dairy roughage	63	0.32	43	0.22
Nondairy feed	0	0.00	4	0.02
Machine hire/rent/lease	43	0.22	29	0.15
Mach. repair & vehicle exp.	215	1.09	225	1.14
Fuel, oil & grease	84	0.43	75	0.38
Replacement livestock	8	0.04	3	0.01
Breeding	45	0.23	44	0.22
Veterinary & medicine	50	0.26	47	0.24
Milk marketing	160	0.81	184	0.93
Bedding	15	0.07	10	0.05
Milking supplies	88	0.45	83	0.42
Cattle lease	0	0.00	2	0.01
Custom boarding	20	0.10	17	0.09
bST expense	14	0.07	21	0.10
Other livestock expense	46	0.23	40	0.20
Fertilizer & lime	70	0.35	57	0.29
Seeds & plants	30	0.15	34	0.17
Spray/other crop expense	30	0.15	30	0.15
Land, building, fence repair	90	0.46	58	0.29
Taxes	55	0.28	62	0.31
Real estate rent/lease	107	0.54	102	0.52
Insurance	55	0.28	67	0.34
Utilities	87	0.44	88	0.44
Interest paid	93	0.47	82	0.41
Miscellaneous	33	0.17	50	0.25
Total Operating Expenses	$ 2,445	$ 12.45	$ 2,382	$ 12.04
Expansion Livestock	0	0.00	0	0.00
Machinery Depreciation	212	1.08	188	0.95
Real Estate Depreciation	59	0.30	75	0.38
Total Expenses	$ 2,715	$ 13.83	$ 2,644	$ 13.37
Net Farm Income Without Appreciation	$ 811	$ 4.13	$ 695	$ 3.51

RECEIPTS AND EXPENSES PER COW AND PER CWT.
Same 10 Below Average Intensive Grazing Dairy Farms, 2001 & 2002

	2001		2002	
Item	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average Number of Cows	127		140	
Cwt. Of Milk Sold		17,440		20,025
ACCRUAL OPERATING RECEIPTS				
Milk	$ 2,240	$ 16.31	$ 1,839	$ 12.86
Dairy cattle	246	1.79	115	0.81
Dairy calves	48	0.35	47	0.33
Other livestock	89	0.65	11	0.07
Crops	33	0.24	-25	-0.17
Miscellaneous receipts	74	0.54	229	1.60
Total Receipts	$ 2,730	$ 19.88	$ 2,216	$ 15.50
ACCRUAL OPERATING EXPENSES				
Hired labor	$ 201	$ 1.46	$ 197	$ 1.38
Dairy grain & concentrate	453	3.30	545	3.81
Dairy roughage	76	0.56	94	0.65
Nondairy feed	0	0.00	1	0.01
Machine hire/rent/lease	66	0.48	59	0.42
Mach. repair & vehicle exp.	97	0.70	84	0.58
Fuel, oil & grease	41	0.30	31	0.22
Replacement livestock	50	0.37	23	0.16
Breeding	28	0.20	24	0.17
Veterinary & medicine	59	0.43	58	0.40
Milk marketing	107	0.78	111	0.77
Bedding	12	0.09	18	0.13
Milking supplies	45	0.33	26	0.18
Cattle lease	0	0.00	2	0.01
Custom boarding	45	0.33	50	0.35
bST expense	11	0.08	9	0.06
Other livestock expense	25	0.18	34	0.24
Fertilizer & lime	122	0.89	105	0.74
Seeds & plants	23	0.17	25	0.17
Spray/other crop expense	13	0.10	14	0.10
Land, building, fence repair	58	0.42	25	0.18
Taxes	39	0.28	41	0.29
Real estate rent/lease	38	0.28	34	0.24
Insurance	38	0.28	28	0.20
Utilities	41	0.30	41	0.29
Interest paid	145	1.06	114	0.79
Miscellaneous	49	0.36	35	0.24
Total Operating Expenses	$ 1,883	$ 13.71	$ 1,827	$ 12.77
Expansion Livestock	75	0.55	12	0.09
Machinery Depreciation	118	0.86	120	0.84
Real Estate Depreciation	112	0.81	77	0.54
Total Expenses	$ 2,188	$ 15.93	$ 2,036	$ 14.23
Net Farm Income Without Appreciation	$ 542	$ 3.95	$ 180	$ 1.26

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

30 Intensive Grazing Dairy Farms, 2002

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)[32]	(11)	(11)	(10)	(9)	(9)	(11)	(11)
4.20	225	3,295,299	22,575	4.3	18	62	941,942
2.94	88	1,734,017	20,025	2.3	16	35	688,987
2.40	68	1,192,525	17,875	2.0	13	30	538,780
2.02	52	1,026,010	16,258	1.7	11	25	429,065
1.39	39	595,663	12,450	1.2	8	19	318,767

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)
$474	22%	$207	$795	$626	$3.69
582	25	395	1,142	749	4.27
651	28	516	1,249	900	4.80
724	30	590	1,518	958	5.51
864	42	756	1,980	1,187	7.14

Value and Cost of Production			Profitability			
Milk Receipts Per Cow	Oper. Cost Milk Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income w/Apprec.	Net Farm Inc. w/o Apprec.	Labor & Mgt. Inc. Per Oper.	Change in Net Worth w/Apprec.
(10)	(10)	(10)	(3)	(3)	(3)	(6)
$2,956	$7.08	$12.93	$93,415	$71,534	$36,616	$66,389
2,593	8.48	14.03	48,167	39,176	13,842	24,296
2,311	9.47	14.50	31,650	27,907	3,979	8,743
2,084	10.62	16.01	14,855	14,972	-8,133	-3,901
1,584	12.44	18.91	-9,917	-2,218	-29,868	-37,749

[32]Page number of the participant's DFBS where the factor is located.

SUPPLEMENTARY INFORMATION

Each year DFBS cooperators volunteer to complete supplementary data collection forms looking at selected management aspects of the business or specific research areas being studied. This is in addition to the normal DFBS data collection form. Two areas that were examined this year were the source of dairy replacements and the breakdown of the milk income and marketing expenses. Following is a summary of this information.

SOURCE OF DAIRY REPLACEMENTS
51 New York Dairy Farms, 2002

Animals Entering Herd	Average
Number calving in 2002 for first time	144
Animals purchased, percent[33]	14%
Animals raised by farm, percent[34]	86%
Current Heifer Inventory	
Raised on dairy, percent	78%
Raised by a custom grower, percent	22%

[33]Animals purchased are animals purchased from a different farm and were not the farm's genetics.
[34]Animals raised by farm are animals that were born on the farm and entered the herd, which includes animals raised by the farm or custom grower.

On the average farm, 144 animals calved for the first time in 2002. The breakdown of these animals for source was 14 percent purchased and 86 percent raised by the farm. Of the current heifer inventory, 78 percent were raised on the dairy and 22 percent were being raised by a custom grower. There is increased interest in evaluating the dairy replacement enterprise.

Milk Income and Marketing Expense Breakdown

Starting January 1st, 2000, the Northeast switched to multiple components pricing, which changed the format of the milk check and how farmers received payment for their milk. To examine the breakdown of the gross milk income and the marketing expenses, 17 intensive grazing farms filled out a detailed form for all the different sources of income for milk sales and the milk marketing expenses on an accrual basis. This information is reported in the following two tables. The tables are divided into six different areas, each representing a different area of income or expenses.

The first section looks at the value of the milk components on a per cwt. basis. The second area looks at the Producer Price Differential. The third area looks at the premiums a farm receives. Any premiums not specifically noted as quality or volume related are included in market premiums. The fourth area looks at the expenses associated with marketing milk. A new line item in this section is the expenses associated with utilizing forward contracting or hedging programs to market milk, such as commission or broker fees. The fifth area is income from the compact program or from forward contracting or hedging programs. The sixth area is the patronage dividends or refunds from the milk cooperatives. Equity purchased in the milk cooperative utilizing a monthly deduction from the milk check or a percent of the patronage dividend is treated as a capital purchase and is not a milk marketing expense. The cumulative total for these six areas is the net price received on farms. Your net farm price can be found on page 10 of your farm's DFBS report.

The table on page 41 reports the averages for these different areas. The table on page 42 contains the range for each of the individual lines of the report. This table is in farm business chart format with each item sorted independently and ranked by fifths. Numbers for the different areas will not add to the totals for that quintile or to the net price received because the highest farms for each item were averaged, not the same farms throughout the six areas. This table shows the range of income and expenses received by farms for all the different areas.

For your individual farm, compare your accrual numbers following this same format to look at how you compare to other farms in your region and to identify possible areas to generate additional revenue.

AVERAGE[35] MILK INCOME AND MARKETING REPORT
17 Intensive Grazing Dairy Farms, 2002

	Pounds	Percent	Price/Pound	Total	$/Cwt of Milk
BASE FARM PRICE					
Butterfat	62,110.47	3.87%	$ 1.171	$ 71,928.18	$ 4.52
Protein	52,115.06	3.28%	$ 1.891	$ 98,581.47	$ 6.04
Solids	90,721.06	5.41%	$ 0.136	$ 5,337.53	$ 0.36
Total Component Contribution					$10.93
PPD	1,633,009.06		$ 1.5285	$ 24,254.06	$ 1.53
Base Farm Price					$ 12.45
Premiums					
Quality				$ 1,583.24	$ 0.11
Volume				$ 2,734.94	$ 0.13
Market Premiums				$ 4,425.65	$ 0.22
Total Premiums					$ 0.46
BASE FARM PRICE + PREMIUM					$ 12.91
Deductions					
Promo				$ 2,575.41	$ 0.15
Hauling + Stop Charges				$ 10,026.53	$ 0.70
Market Fees & Coop Dues				$ 1,000.47	$ 0.04
Futures/Contract Fees				$ 0.00	$ 0.00
Total Deductions					$ 0.90
BASE FARM PRICE + PREMIUMS - DEDUCTIONS					$ 12.02
Marketing Programs					
Compact				$ 0.00	$ 0.00
Futures Contracts, Forward Contracting, Etc.				$ 2,388.29	$ 0.10
Total Marketing Income					$ 0.10
Patronage Dividends				$ 3,224.12	$ 0.14
NET PRICE RECEIVED ON FARM, ALL SOURCES					**$ 12.26**
PPD - Hauling, per cwt.					$ 0.83
PPD - Hauling + Market Premiums, per cwt.					$ 1.05

[35] Each calculation of an average is independent of all others. Therefore, math operations on the detail will not result in the totals. However, detail in the "$/Cwt of Milk" column will result in the totals.

MILK PRICE INFORMATION BY QUINTILE[36, 37]
(Each Category Sorted Independently)
17 Intensive Grazing Dairy Farms, 2002

	Lowest Quintile	◄			Highest Quintile ►
Butterfat, %	3.57	3.72	3.84	3.96	4.38
Protein, %	2.93	3.03	3.11	3.19	4.37
Other Solids, %	4.17	5.67	5.75	5.79	5.99
Butterfat, $ per Cwt.	4.12	4.38	4.57	4.66	5.06
Protein, $ per Cwt.	5.60	5.91	6.11	6.22	6.58
Other solids, $ per Cwt.	0.28	0.31	0.35	0.38	0.52
Total Component Value per Cwt.	**$10.11**	**$10.55**	**$11.08**	**$11.30**	**$11.99**
PPD, $ per Cwt.	1.18	1.36	1.48	1.66	2.13
Base Farm Price per Cwt.	**$11.45**	**$12.03**	**$12.59**	**$12.84**	**$13.84**
Quality, $ per Cwt.	-.06	.04	.12	.18	.35
Volume, $ per Cwt.	-.01	.00	.11	.24	.38
Market premium, $ per Cwt.	.00	.06	.14	.25	.79
Total Premium, $ per Cwt.	**.13**	**.31**	**.47**	**.54**	**1.01**
Base Farm Price + Premiums per Cwt.	**$11.76**	**$12.60**	**$13.13**	**$13.43**	**$14.14**
Promotion, $ per Cwt.	.12	.15	.15	.16	.19
Hauling, $ per Cwt.	.32	.56	.69	.83	1.26
Market fees & coop dues per Cwt.	.00	.00	.05	.07	.12
Futures/contract fees, $ per Cwt.	.00	.00	.00	.00	.00
Total Marketing Expenses per Cwt.	**$ .55**	**$ .76**	**$ .88**	**$1.02**	**$1.45**
Base + Premiums – Deductions per Cwt.	**$10.90**	**$11.82**	**$12.27**	**$12.41**	**$13.11**
Compact, $ per Cwt.	.00	.00	.00	.00	.00
Futures contract, forward contracting, $ per Cwt.	.00	.00	.00	.00	.57
Total Marketing Income, $ per Cwt.	**$ .00**	**$ .00**	**$ .00**	**$ .00**	**$ .57**
Patronage Dividends, $ per Cwt.	**$ .00**	**$ .00**	**$ .03**	**$ .19**	**$ .57**
Net Price Received From All Sources, $ per Cwt.	**$11.38**	**$12.10**	**$12.42**	**$12.57**	**$13.15**
PPD - hauling, $ per Cwt.	**0.55**	**0.82**	**0.85**	**0.92**	**1.11**
PPD - hauling + mkt premiums, $ per Cwt.	**0.67**	**0.91**	**1.05**	**1.15**	**1.64**

[36]Each calculation of an average is independent of all others. Therefore, math operations on the detail will not result in the totals.

[37]Holstein and Jersey herds are included.

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 **S**pecific.

2. Goals should be **M**easurable.

3. Goals should be **A**chievable but challenging.

4. Goals should be **R**ewarding.

5. Goals should be **T**imed 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

_____

_____

_____

_____

_____

_____

_____

_____

Worksheet for Setting Goals (Continued)

II. Goals

What	How	When	Who is Responsible

Summarize Your Business Performance

The Farm Business Chart on page 39 can be used to help identify strengths and weaknesses of your farm business. Identify three major strengths and three areas of your farm business that need improvement.

Strengths:	Needs improvement:

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 16)

Accrual Receipts - (defined on page 17)

Annual Cash Flow Statement - (defined on page 26)

Appreciation - (defined on page 18)

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 27)

Cash Paid - (defined on page 15)

Cash Receipts - (defined on page 17)

Change in Accounts Payable - (defined on page 16)

Change in Accounts Receivable - (defined on page 17)

Change in Inventory - (defined on page 17)

Cost of Term Debt – A weighted average of the cost of borrowed capital to the farm. Calculate by multiplying end of year principal of each loan that is borrowed by the interest rate for each loan at that time. Add up each amount that is calculated for each loan and then divide by total amount of borrowed funds. Do not include accounts payable, operating debt or advanced government receipts. This information is found on pages 8 & 9 of the data entry form.

Culling Rate – (defined on page 31)

Current Portion - (defined on page 21)

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

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

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

Debt Coverage Ratio – (defined on page 27)

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

Debt to Asset Ratios - (defined on page 24)

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

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

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

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

Farm Debt Payments as Percent of Milk Sales - Amount of milk income committed to debt repayment, calculated by dividing planned debt payments by total milk receipts. A reliable measure of repayment ability, see page 26.

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

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

Hired Labor Expense per Hired Worker Equivalent – The total cost to the farm per hired worker equivalent. Divide accrual hired labor expense by number of hired plus family paid worker equivalents.

Hired Labor Expense as % of Milk Sales – The percentage of the gross milk receipts that is used for labor expense. Divide accrual hired labor expense by accrual milk sales.

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

Interest Expense Ratio – Accrual interest expense divided by total accrual receipts.

Labor and Management Income - (defined on page 19)

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

Labor Efficiency - Production capacity and output per worker.

Leverage Ratio – (defined on page 24)

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

Net Farm Income - (defined on page 18)

Net Farm Income from Operations Ratio – (defined on page 21)

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

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

Operating Costs of Producing Milk - (defined on page 32)

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

Operator Resources/cwt. - The total value of labor contributed to the farm from all owner/operators. This measure is calculated by multiplying the number of months of labor provided by all owner/operators by $2,100 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 32)

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 21)

Return on Total Capital - (defined on page 21)

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 32)

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 $2,100 per month plus the value of operator(s) labor at $2,100 per month plus total hired labor expense divided by the number of cwt. produced.

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

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

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