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DAIRY FARM BUSINESS SUMMARY

AUGUST 2002 *E.B. 2002-12*

INTENSIVE GRAZING FARMS NEW YORK 2001

George Conneman
James Grace
Jason Karszes
Dan Demaine
Linda D. Putnam
Ed Staehr
Steve Bulkley
Janice Degni
Judith Barry

Department of Applied Economics and Management
College of Agriculture and Life Sciences
Cornell University, Ithaca, New York 14853-7801

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For additional copies, contact:

Faye Butts
Dept. of Applied Economics and Management
Agricultural Finance and Management Group
358 Warren Hall
Cornell University
Ithaca, New York 14853-7801

E-mail: fsb1@cornell.edu
Fax: 607-255-1589
Phone: 607-254-7412

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Intensive Grazing Farms
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George Conneman*
James Grace
Jason Karszes
Dan Demaine
Linda D. Putnam
Ed Staehr
Steve Bulkley
Janice Degni
Judith Barry

Department of Applied Economics and Management
Cornell University, Ithaca, New York 14853-7801 USA
*Author phone: 607-255-1367
*Author e-mail: gjc4@cornell.edu

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2001 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 sixth 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). Fifty-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 54 farms were asked to complete a grazing practices survey. Thirty-six 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 32 farms which were not first year grazers and on which at least 40 percent of forage consumed during the grazing season was grazed. These 32 farms were divided on the basis of net farm income per cow (without appreciation) above and below $574 which was the average for these 32 intensive grazing farms. Nineteen farms with net farm income per cow above $574 are in the "Above Average" group and thirteen farms with net farm income per cow below $574 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 2000 and 2001. 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 that had more than 100 cows.

The summary and analysis portion of this report follows the same general format as in the 2001 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 47 farms that were grazing in both 2000 and 2001 and participated in the DFBS project for both years.

These 47 farms maintained herd size, with average cow numbers only changing by one cow. While herd size didn't increase, the average number of worker equivalents increased by 4 percent to 2.88 workers. Nontillable and tillable pasture and hay acres increased 5.7 percent. Milk sold per cow decreased 1.4 percent to 16,793 pounds. This decrease in production was offset by the addition of one cow to herd size and total milk production shipped off the farm increasing by only .3 percent.

With herd size only increasing by 1.1 percent and worker equivalents increasing by 4 percent, cows per worker equivalent decreased to 33 cows per worker. Coupled with the decrease in milk sold per cow, milk sold per worker equivalent decreased 3.6 percent. With labor efficiency decreasing, corresponding labor costs increased. Hired labor cost per worker equivalent increased 13 percent to $24,900. The decrease in labor efficiency coupled with the increase in cost per worker equivalent, led to an 18.4 percent increase in hired labor expense per cwt. of milk shipped. While labor costs did increase significantly, with the increase in milk price, hired labor cost as a percent of milk sales actually decreased to 9.7 percent.

The 2001 growing season continued to be a challenge to manage. With dryer weather, hay yields fell 14.8 percent. While hay production was affected by dry conditions, corn yields actually improved with the average tons per acre increasing 39 percent to 15.6 tons.

With the challenging growing conditions and dry conditions affecting hay and pasture quality and quantity, feed costs increased for the year. Grain and concentrate purchased per cwt. increased 7.2 percent to $3.86 per cwt., and dairy feed and crop expense per cwt. increased 4.2 percent. While feed costs were up, the increase in milk price more than offset this increase, and the percent of milk used to purchase grain and concentrate fell 14.8 percent to 23 percent. Increased labor and feed costs were two of the driving forces that led to a 16 percent increase in total farm operating expenses, which averaged $11.62 in 2001.

Gross milk price increased 23.2 percent to $16.66 per cwt., and net milk price increased 25.4 percent to $15.89 per cwt. The value of milk sold per cow increased 22.2 percent to $2,842. Dairy cattle sales per cow decreased 10.5 percent while dairy calf sales per cow were relatively unchanged.

The significant increase in milk price more than offset the increase in costs, decreases in milk production, and challenges with forage production, and resulted in significant improvements in profitability.

- Net farm income without appreciation increased 64.6 percent to $56,214.
- Net farm income with appreciation increased 99.6 percent to $95,289.
- Labor and management income per operator rose 381 percent to $16,369.
- Rate of return on equity capital without appreciation averaged 2.8 percent.
- Rate of return on all capital without appreciation averaged 3.8 percent.

The increase in profits impacted the financial summary of these farms. Net worth increased 16.4 percent, and the debt to asset ratio fell to 0.28. While net worth did increase, so did borrowings, with average debt per cow increasing to $2,036.

Overall, 2001 was a good year for the grazing dairy. While on average, profits increased from 2000, the increase in costs coupled with the decrease in milk production per cow and relatively no change in herd size didn't allow farms to take full advantage of the high milk prices.

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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 47 Grazing Dairy Farms, 2000 & 2001

Selected Factors	Average of 47 Farms 2000	Average of 47 Farms 2001	Percent Change
Size of Business			
Average number of cows	95	96	1.1
Average number of heifers	71	74	4.2
Milk sold, lbs.	1,633,324	1,637,760	0.3
Worker equivalent	2.77	2.88	4.0
Total nontillable and tillable pasture & hay acres	261	276	5.7
Total nontillable pasture & tillable acres	336	344	2.4
Rates of Production			
Milk sold per cow, lbs.	17,220	16,973	-1.4
Hay DM per acre, tons	2.7	2.3	-14.8
Corn silage per acre, tons	11.2	15.6	39.3
Labor Efficiency & Costs			
Cows per worker	34	33	-2.9
Milk sold per worker, lbs.	589,648	568,667	-3.6
Hired labor cost per cwt.	$1.36	$1.61	18.4
Hired labor cost per worker	$22,028	$24,900	13.0
Hired labor cost as % of milk sales	10.1%	9.7%	-4.0
Cost Control			
Grain & conc. purchased as % of milk sales	27%	23%	-14.8
Grain & conc. per cwt. milk	$3.60	$3.86	7.2
Dairy feed & crop expense per cwt. milk	$4.74	$4.94	4.2
Labor & mach. costs per cow	$1,151	$1,283	11.5
Total farm operating costs per cwt. sold	$12.97	$13.66	5.3
Interest costs per cwt. milk	$0.77	$0.75	-2.6
Milk marketing costs per cwt. milk sold	$0.85	$0.77	-9.4
Operating cost of producing cwt. of milk	$10.02	$11.62	16.0
Total costs of producing cwt. of milk	$15.20	$17.30	13.8
Capital Efficiency (average for the year)			
Farm capital per cow	$6,520	$7,027	7.8
Mach. & equip. per cow	$1,281	$1,392	8.7
Asset turnover ratio	0.46	0.52	13.0
Income Generation			
Gross milk sales per cow	$2,325	$2,842	22.2
Gross milk sales per cwt.	$13.52	$16.66	23.2
Net milk sales per cwt.	$12.67	$15.89	25.4
Dairy cattle sales per cow	$190	$170	-10.5
Dairy calf sales per cow	$37	$38	2.7
Profitability			
Net farm income without appreciation	$34,148	$56,214	64.6
Net farm income with appreciation	$47,742	$95,289	99.6
Labor & mgt. income per operator/manager	$3,403	$16,369	381.0
Rate of return on equity capital without apprec.	-1.4%	2.8%	300.0
Rate of return on all capital without apprec.	1.1%	3.8%	245.5
Financial Summary			
Farm net worth, end year	$440,897	$513,323	16.4
Debt to asset ratio	0.30	0.28	-6.7
Farm debt per cow	$1,987	$2,036	2.5

INTENSIVE GRAZING SURVEY SUMMARY

From the survey data of the 32 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 32 selected farms of $574 was used to divide the 32 farms into 19 "above average" farms and 13 "below average" farms.

SELECTED PRODUCTION AND PROFITABILITY MEASURES

Intensive Grazing Dairy Farms, 2001

	19 Above Average Farms	13 Below Average Farms
Pounds milk sold per cow	16,698	13,660
Net farm income per cow without appreciation	$806	$79
Operating cost of producing milk per cwt.	$10.58	$14.40
Total cost of production per cwt.	$16.00	$20.83

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, 2001

	19 Above Average Farms	13 Below Average Farms
Average number of cows	100	88
Percent of farms with seasonal calving	11%	0%
Percent of farms with semi-seasonal calving	16%	54%
Percent of farms with parlor-type milking system	42%	38%
Percent farms control internal parasites in cows	53%	54%
Percent farms control internal parasites in heifers	79%	85%
Percent farms control external parasites in cows	89%	92%
Percent farms control external parasites in heifers	74%	92%
Average percent cows bred A.I.	82%	79%
Average percent heifers bred A.I.	66%	62%
Average percent forage from pasture	69%	81%
Average length of grazing season	182 days	173 days
Average acres grazed per cow	1.04 acres/cow	1.32 acres/cow
Average pounds dry matter supplemented grain	17.9 lbs	16.3 lbs
Percent farms supplement with forage	80%	69%
Average pounds dry matter supplemented forage	8.2	8.3
Percent rotated after each milking	74%	31%
Percent rotated one time a day	16%	46%
Percent rotated every other day	5%	8%
Percent other rotation	5%	15%
Percent farms applied fertilizer	58%	23%
Percent farms applied manure to pasture	37%	54%
Percent farms that clipped pasture	95%	92%
Percent farms weed problems	53%	69%
Percent farms water every paddock	53%	46%
Percent farms water every laneway	32%	46%
Average percent pasture that was reseeded in the last 10 years	31%	49%
Percent farms harvested mechanically	79%	62%
Average percent pasture harvested by machine	42%	44%
Most common pasture species:		
First	Orchardgrass	Native grass mix, orchardgrass
Second	Ladino clover	Ladino Clover
Third	Bluegrass, ladino clover	Weeds

Seasonal calving, supplementing with forage, rotating after each milking, and applying fertilizer all appear to be associated with higher profitability and higher production per cow within the above average group. Some of the farms in the below average group used these same practices.

The tables below compare the above average group of farms to the below average group of farms for certain practices. Successful managers of grazing farms need all of the skills for managing the herd in the barn during the winter in addition to grazing management skills.

Seasonal Calving

The study of the financial data to determine the effect of employing seasonal or semi-seasonal calving on farm profitability shown above was further analyzed. This is the second year that calving practices have been explored. Seasonal calving means that, for at least one day a year, no cows are milked. Semi-seasonal calving indicates that calving is grouped at one or more times of the year. Only two of the 32 farms that filled out the survey identified themselves as seasonal while 11 identified themselves as semi-seasonal.

SEASONAL CALVING
Intensive Grazing Farms, 2001

	19 Above Average Farms		13 Below Average Farms	
	Seasonal or Semi-Seasonal Calving?		Seasonal or Semi-Seasonal Calving?	
	(6) Yes	(13) No	(7) Yes	(6) No
Pounds milk sold per cow	17,148	18,520	13,781	15,947
Net farm income per cow without appreciation	$1,010	$837	$118	$118
Operating cost of producing milk/cwt.	$9.26	$10.26	$14.05	$14.52
Number of farms strictly seasonal	2	--	0	--
Percent of average number of cows when semi-seasonal farms are at lowest number milking	59%	--	52%	--

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, 2001

	19 Above Average Farms		13 Below Average Farms	
	(8) Corn Silage	(11) No Corn Silage	(3) Corn Silage	(10) No Corn Silage
Pounds of milk sold per cow	18,090	18,084	15,372	14,607
Net farm income per cow without appreciation	$872	$906	$161	$-63
Pounds dry matter of corn silage	7.28 lbs.	-----	8.6 lbs.	-----
Percent forage from pasture	64%	71%	72%	84%

In addition to corn silage, many farms feed other forages including haylage, baleage and dry hay. The analysis indicates that a greater percentage of the above average farms fed other forages. Below is a table that further explores the other forage feeding practices of both the above and below average farms.

OTHER FORAGE SUPPLEMENTATION
Intensive Grazing Farms, 2001

	19 Above Average Farms		13 Below Average Farms	
	(15) Feed Other Forage	(4) Feed no Other Forage	(6) Feed Other Forage	(7) Feed no Other Forage
Net farm income without appreciation	$828	$1131	$310	$-63
Milk per cow	17,963	18,548	15,708	13,991
Operating cost per cwt.	$10.40	$8.23	$13.25	$15.14
Pounds dry matter other forage	5.4 lbs.	----	5.6 lbs.	----
Percent of farms feeding corn silage	40%	50%	0 %	43%

Ration Details

Of the 19 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. Five fed an average of 6.2 pounds of haylage, three fed baleage at an average of 4.9 pounds, and nine fed an average of four pounds of dry hay. In terms of grain, the above average farms averaged 17.8 pounds of grain per cow per day. Eleven fed an average of 10.5 pounds of corn meal, five fed soybean meal at an average of 2.9 pounds, 11 fed an average of 15.1 pounds of a grain mix and one farm fed 3 pounds of cottonseed. In addition, three fed high moisture corn, one farm fed citrus pulp, and one farm fed wet brewers grain.

Of the 13 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. None of farms fed haylage while two farms fed an average of 11 pounds of baleage and 4 farms fed an average of 6.8 pounds of dry hay. The below average farms fed an average of 16.4 pounds of grain per cow per day. Seven of these farms fed an average of 11.8 pounds of corn meal, two fed an average of 2.3 pounds of soybean meal, and eight fed an average of 12.5 pounds of a grain mix. In addition, one farm fed high moisture corn and another fed cob corn.

Frequency of Rotation

In the above average group, 14 farms rotated cows into a fresh paddock after each milking, three farms provided new pasture once per day, one farm moved the cows every other day, and one farm rotated every three days. One of the farms gave cows access to fresh pasture three times a day by moving them in the middle of the day in addition to after each milking. In the below average group, four farms rotated cows into a fresh paddock after each milking, six 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 on a continuous basis. 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, 2001

	19 Above Average Farms		13 Below Average Farms	
	Rotation		Rotation	
	(14) After Each Milking	(5) Other	(8) After Each Milking	(5) Other
Pounds milk sold per cow	17,493	19,746	13,798	15,222
Net farm income per cow without appreciation	$904	$854	$55	$133

Water Source

There are various options for providing water to pasture. In the above average group, 12 farms used a well, four farms used a stream, two farms used a spring, and one farm used a pond. In the below average group, five farms used a well, three farms used a stream, three farms used a pond, and two farms used a spring.

WATER SOURCE
Intensive Grazing Farms, 2001

	19 Above Average Farms		13 Below Average Farms	
	(12) Well	(7) Other[2]	(5) Well	(8) Other[2]
Pounds milk sold per cow	17,372	19,311	12,760	16,048
Net farm income per cow without appreciation	$815	$1024	$-118	$251

[2]Pond, stream, spring, or combination.

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, parrabone, 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, 11 farms have a pipeline, four farms have a herringbone parlor with conventional exit, three have an "other" milking system, and one uses a parallel parlor. In the below average group, eight farms used a pipeline, three farms used an "other" milking system, one used a herringbone parlor with conventional exit, and one used a dumping station.

MILKING SYSTEM
Intensive Grazing Farms, 2001

	19 Above Average Farms		13 Below Average Farms	
	(8) With parlor	(11) Without parlor	(4) With parlor	(9) Without parlor
Pounds milk sold per cow	16,338	19,358	14,431	14,940
Net farm income per cow without appreciation	$876	$905	$44	$137
Average number of cows	166	51	164	54
Operating cost of producing milk/cwt	$8.75	$8.22	$12.63	$10.50

Commercial Fertilizer

Application of commercial fertilizer to pasture may lead to a boost in pasture forage yield and quality. In the above average group, 11 farms applied commercial fertilizer. Of these, four farms applied a mixture that included nitrogen, phosphorous, and potassium; four applied urea; and two applied ammonium sulfate. In the below average group, three farms applied commercial fertilizer of which two applied urea and one applied ammonium sulfate. In addition to commercial fertilizer, seven above average farms and seven below average farms applied manure to pasture other than through grazing.

COMMERCIAL FERTILIZER
Intensive Grazing Farms, 2001

	19 Above Average Farms		13 Below Average Farms	
	(11) Applied Fertilizer	(8) Did not apply fertilizer	(3) Applied Fertilizer	(10) Did not apply fertilizer
Pounds milk sold per cow	18,047	18,140	13,528	15,160
Net farm income per cow without appreciation	$863	$930	$116	$107
Operating cost of producing milk/cwt	$9.60	$10.42	$13.35	$14.54
Acres grazed per cow	1.04	1.38	1.41	1.30

Intensive Grazing Satisfaction Comments

On a scale of one to five, with five being the highest, the average rating of grazing satisfaction was four. When asked whether their lifestyle has improved with the adoption of rotational grazing, all but four indicated their lifestyle had improved. Other comments from graziers are:

- "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."
- "Only way to be organic."

INTENSIVE GRAZING FARMS VS. NON-GRAZING FARMS
New York State Dairy Farms, 2001

Item	All Intensive Grazing Farms[3]	Non-Grazing Farms[4]	Profitable Grazing Farms[5]	Profitable Non-Grazing Farms[6]
Number of farms	54	98	19	47
Business Size & Production				
Number of cows	94	91	100	102
Number of heifers	70	67	71	79
Milk sold, lbs.	1,539,616	1,729,236	1,663,668	2,067,655
Milk sold/cow, lbs.	16,295	19,105	16,698	20,326
Milk plant test, % butterfat	3.71%	3.74%	3.63%	3,72%
Cull rate	26.6%	28.6%	21.0%	28.4%
Tillable acres, total	288	289	249	298
Hay crop, tons DM/acre	2.2	2.3	2.5	2.6
Corn silage, tons/acre	15.7	15.4	13.5	15.9
Forage DM/cow, tons	5.7	7.8	3.9	8.0
Labor & Capital Efficiency				
Worker equivalent	2.78	3.16	2.83	3.19
Milk sold/worker, lbs.	553,819	547,227	587,869	648,168
Cows/worker	34	29	35	32
Farm capital/worker	$231,302	$235,622	$224,440	$246,169
Farm capital/cow	$6,841	$8,182	$6,352	$7,699
Farm capital/cwt. milk	$42	$43	$38	$38
Milk Production Costs & Returns				
Selected costs/cwt.:				
Hired labor	$1.60	$1.54	$1.83	$1.30
Grain & concentrate	$3.79	$3.95	$3.23	$3.60
Purchased roughage	$0.40	$0.30	$0.38	$0.25
Replacements purchased	$0.23	$0.17	$0.30	$0.11
Vet & medicine	$0.41	$0.46	$0.35	$0.43
Milk marketing	$0.76	$0.79	$0.73	$0.79
Other dairy expenses	$1.29	$1.30	$1.01	$1.11
Operating cost/cwt.	$11.71	$12.07	$10.58	$10.21
Total labor cost/cwt.	$4.38	$4.20	$4.14	$3.76
Operator resources/cwt.	$2.22	$2.27	$1.83	$2.20
Total cost/cwt.	$17.45	$17.55	$16.00	$15.29
Average farm price/cwt.	$16.69	$16.09	$17.24	$16.14
Related Cost Factors				
Hired labor/cow	$262	$292	$305	$263
Total labor/cow	$717	$798	$689	$763
Purchased dairy feed/cow	$686	$807	$601	$779
Purchased grain & concentrate as % of milk receipts	23%	25%	19%	22%
Vet & medicine/cow	$67	$87	$58	$88
Machinery costs/cow	$528	$648	$533	$603
Feed & crop exp./cwt.	$4.94	$5.23	$4.28	$4.79
Profitability Analysis				
Net farm income (without apprec.)	$52,200	$45,128	$80,621	$96,924
Net farm income per cow (w/o apprec.)	$555	$496	$806	$950
Labor & management income/operator	$15,205	$7,153	$43,431	$35,040
Labor & mgmt. income/oper./cow	$162	$79	$434	$344
Rates of return on:				
Equity capital with appreciation	10.3%	5.8%	19.8%	12.3%
All capital with appreciation	9.1%	5.9%	15.7%	10.6%

[3]Farms grazing at least three months of year, changing paddock at least every three days, and forage from pasture at least 30 percent.
[4]Farms with similar herd size, as the 54 rotational grazing farms.
[5]Farms with net farm income per cow greater than $574, had been grazing at least two years, and forage from pasture at least 40 percent.
[6]Farms with similar herd size as the 19 profitable grazing farms and net farm income per cow greater than $574.

CASE STUDIES

East Hill Farms

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

From 1991 to 1994, the farm grew to 250 cows in the confinement system. While the farm was successful and making progress, due to the intensity of management and labor requirements and the fact that Gary missed rotational grazing, he and Betty decided to start switching back to a grazing system in 1994 with the replacements. He felt that rotational grazing and seasonal milk production would fit his preferred management style and allow the farm to at least equal, if not surpass, the profitability of the confinement system. In 1995, the cows were back into a grazing system, supplemented by a TMR out of the feed storage system. For 1996 more land was converted to pasture and less supplementing was done with a TMR. In 1997, 277 milking and dry cows along with 212 dairy replacements were grazed on 300 acres of pasture. For winter feed, 141 acres of corn and 214 acres of hay were raised.

In 1998, Gary & Betty started moving the herd towards a seasonal herd, with less or ideally no lactating cows in the winter and started moving towards a lower input system. With this approach and increased involvement of their children, Gary and Betty felt they could eliminate the part-time milkers and the one full-time employee with just one part-time person during the fall and winter. In 1998, the herd averaged 232 cows, 221 heifers, and produced 14,481 pounds of milk per cow. The cows were milked in a double 14, 28 unit, low cost, no frills parlor built where the flat barn parlor was originally installed in the existing tie stall barn.

During 1998, considerable time was spent planning the decision to reinvest in the farm and build a new milking center. A swing 40 DairyMaster parlor was constructed in the spring of 1999, with cows milking through the new milking center in August of 1999. Gary and Betty felt that they needed to walk away from the original tie stall barn that had been remodeled into different parlors and was worn out and not efficient. Increased labor efficiency, moderate investment level, high throughput, minimum maintenance, energy efficiency, and ability to add more cows are some of the reasons why the investment was made. In 1999, the farm averaged 232 cows with 4.32 worker equivalents and was fully seasonal for the first time. Milk production averaged 14,483 pounds per cow.

In 2000, with the new milking center working quite well and the ability to graze additional land, herd size was expanded to 358 cows with 4.75 worker equivalents. This increase in herd size brought cows per worker up to 75.3. Also emphasized in 2000 was a low input approach to feeding the cows to try and maximize profit off the grass. In 2000, milk production averaged 9,550 pounds per cow with very little feed purchased. Net milk income over purchased grain and concentrates averaged $1,148 per cow.

In 2001, there was continued herd growth, with the herd size averaging 400 cows with 4.57 worker equivalents. Cows per worker were now at 87.5. In 2001, the feeding program was changed again, with the feeling that the low input approach was not maximizing farm profitability. The cows were fed a supplemental TMR consisting of a grain mix, wet brewers grain, and corn silage. With the new feeding system, milk production increased back up to 11,703 pounds per cow, body condition scores and breeding efficiency increased, and milk components increased. While more was spent on grain than in 2000, the increase in milk production and component levels offset the increase in feed costs and increased the business returns. Net milk income over purchased grain averaged $1,561 per cow, an increase of $431. If the milk price change between the two years is removed there was still an increase of $220 due to increased milk production and increased component production.

For 2002, the farm is going to utilize a one-shot grist mix for supplementation on a free choice basis. Cows will have 45 minutes at each milking to eat the supplementation mix at a feed bunk that is supplied by feed bins. Gary is trying this system due to the ease of supplementation, no silage in the mix, and the ability to use feed bins instead of tractors and mixer wagons, and the potential to increase milk production.

Also in 2001, a tunnel was constructed under the state highway bisecting the farm. With half of the grazing pasture on the other side of the road, Gary and Betty felt that something needed to be done to improve crossing the road. While the red tape associated with getting approval to build the tunnel was time consuming, the increase in safety due to not having to stop traffic, community relations, labor efficiency, and more time on feed for the cows all made the tunnel a good investment for the business.

With the emphasis on seasonal grazing, the breeding program is a significant management focus. Two shots of Lutylase on days 1 and 13 are utilized. Heats are observed for 15 days with A.I. breeding each day in a palpation rail. After 15 days, clean-up bulls are introduced to the herd. At the beginning of the second heat cycle, heats are observed for 4-5 days with A.I. again being utilized. A.I. is emphasized to continue to improve genetics and get more cows bred with the desired window of 8 weeks for spring calving. In 2002, 460 cows were calved in 7 weeks.

In 2001, the last pastures were seeded over to perennial rye grasses. Gary and Betty have moved towards the perennial rye grasses since 1999 for the good stand life, high dry matter production, and ease of management within the grassing system. For 2002, perennial rye grasses make up 100% of the pasture system.

With the continued increase in herd size and the short calving window, the calf program becomes a significant part of the business. For the first 10 days calves are grouped in pens of 15 in the old tie stall barn and are fed on nipple barrels. After ten days they are combined into groups of 30 calves, moved to pens in the old freestall barn and fed on a bar feeder. Cold milk is fed once a day to the different groups. They are weaned between 5 & 6 weeks of age and at 6 weeks are moved out to pasture in groups of 90. A training pen is utilized to train them to electric fence before they go out to the pasture.

Over the last 3 years, Gary and Betty have also been part of a grazing group known as the GrassStains, comprised of 12 different farms from 7 different states. By being involved with a group of like-minded farms, they are able to challenge how they run their business, learn new grazing practices, and utilize other peoples' experiences in making management decisions.

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

To help manage the farm as a business, they have also developed a mission statement. Their farm mission statement is: “Enjoyable farming through low stress, high profit, and simple systems with minimized labor.” They work at keeping things simple and this enables them to duplicate the operation with the possibilities of setting up another dairy in the future as potential management possibilities come along. Their oldest daughter, Holly, has just graduated from high school and will be attending SUNY Morrisville in the fall to major in ag business. She has been very involved with the farm during the past few years and enjoys managing the cattle. They look forward to 2002 and beyond as exciting times in the grazing business.

Reed Acres Case Study

Reed Acres is a 60-cow dairy operated by Jim Reed with his wife, Ellie, and their two sons, Levi and Ben. Jim’s use of pasture and management skill has allowed him to operate the farm with only minimal family and part-time help and yet still have enough time to enjoy life and build his own management skills.

Jim took over management of Reed Acres from his father 25 years ago after graduating from Cornell. He is the fifth generation farmer in his family and his father built up the current family farm from the ground up on top of Mt. Pleasant in Dryden, New York. Upon assuming the management of the farm, Jim oversaw the renovation of the tie stall barn and the installation of a pipeline milking system. His initial focus was on improving the genetics of his herd and obtaining maximum production per cow. Eventually, he met his goal and, for a time, had one of the highest herd averages in the county. While he was gratified to have reached his goal, Jim began to question whether maximum production met his financial and lifestyle goals. In searching for a different way to farm, Jim began to experiment with rotational grazing.

Pasture at Reed Acres

Reed Acres contains approximately 60 acres of pasture that feeds approximately 50 milking cows, 10 dry cows and 40 heifers. The pastures are based on Kentucky bluegrass but also include some orchardgrass, reed canary grass, and clover. About 15 acres of the pasture is extremely steep and is grazed continuously. Of the balance, the milking cows have access to around 25 acres and the heifers to around 20.

When he first started grazing, Jim set up a grazing system that consisted of large paddocks that were then broken off with temporary fencing into areas just big enough for one twelve hour feeding. At that time, his heifers were kept at another farm and all of the pasture was devoted to the milking cows. Now that the heifers are back on the farm, the milkers graze in one of 14 1-2 acre paddocks during the day and then at night they have access to the 15 acres of continuous pasture and are also fed round bales. The heifers and dry cows have four, 5 acre paddocks that are rotated about once a week.

Jim views pasture as a component in the total ration that he is feeding to the cows. He is somewhat short of pasture acreage, so he uses several techniques to either stretch out the pasture he has or replace the pasture component of the ration when pasture runs out. His first tactic is to use nitrogen fertilizer in the form of urea. He generally spreads 100 pounds of urea to the acre 3-4 times a year to boost production. The last two years, Jim has planted sorghum-sudangrass on a few paddocks to allow for summer grazing when his normal paddocks are not producing. In 2001, he was able to graze the sorghum every two weeks for a total of 3-4 grazings from late July through mid September. When there is no pasture at all, Jim feeds round bales and corn silage. In addition to these ingredients, Jim feeds 10-15 pounds of a pelleted grain per day to the milking cows.

A Part of a Lifestyle

The use of pasture at Reed Acres allows Jim to manage the farm with little family or hired help. Jim's wife Ellie is kept busy homeschooling their children and running a pet day care business. He employs an occasional relief milker and a retired neighbor to help with fieldwork but otherwise manages the farm more or less by himself.

Over the years, Jim has found that taking time away from the farm to improve his management ability can pay big dividends. He attends many extension sponsored seminars to fine-tune his herd and financial management. He also has taken several classes in a variety of areas at the local community college. Jim says that education and improving your own abilities are the best investment you can make because it will stay with you in anything you do.

The Future

Jim is currently exploring seasonal calving. He has found in his years using pasture that he makes most of his milk and profit during the first two months of the grazing season. Seasonal calving would mean his herd would all be peaking during the spring flush and thus take even more advantage of this time of year. He also likes the idea of having a time during the year when no cows are milking so that he and his family could do some traveling. Jim is also considering introducing some Jersey blood into his herd to improve components.

Conclusion

On Reed Acres, Jim Reed has used grazing to allow him to manage a small dairy farm with minimal additional labor and to help create time for him and his family to explore other interests. In the future, additional tweaking of the farm will include an emphasis on optimizing the benefits of pasture while maintaining a balanced lifestyle.

SUMMARY OF GRAZING FARMS WITH OVER 100 COWS

There were 14 farms with more than 100 cows that indicated on the 2001 Dairy Farm Business Summary that they were grazers. The table on the following page compares these 14 grazing farms with 36 non-grazing farms of similar size and location. Surveys were collected from nine of these 14 large grazing farms.

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

- Average length of 2001 grazing season was 183 days.
- On average, the farms had 1.16 acres per cow.
- All nine farms moved their cows to a new paddock every 12 hours.
- All clipped their pastures at least once, one farm clipped several times.
- Six of the farms spread commercial fertilizer on the paddocks, four spread manure on pastures other than by grazing.
- Eight of the farms provided water in every paddock, the other provided it in the laneway.
- Seven of the farms obtained their water from a well, one from a spring and one from a pond.
- The nine farms average 69% of forage consumption from pasture.
- Seven of the farms fed some supplemental forage, three fed corn silage.
- Two of the farms had seasonal or semi-seasonal calving.
- They had re-seeded an average of 62% of the paddocks for grazing in the last 10 years.
- Eight of the farms mechanically harvested some of their grazing acerage with an average of 56% harvested by machine.
- All but one of the nine farms milks with a parlor-type system.
- The nine farms artificially inseminate an average of 77% of the cows and 51% of the heifers.

Of the nine farms, four indicated the highest level of satisfaction while five chose the second highest level. Seven of the farms were more satisfied with grazing than conventional feeding.

INTENSIVE GRAZING FARMS WITH MORE THAN 100 COWS VS. NON-GRAZING FARMS OF SIMILAR SIZE, 2001

Item	Grazing Farms >100 Cows	Non-Grazing Farms
Number of farms	14	36
Business Size & Production		
Number of cows	203	207
Number of heifers	147	134
Milk sold, lbs.	3,090,762	4,506,932
Milk sold/cow, lbs.	15,236	21,758
Milk plant test, % butterfat	3.74%	3.65%
Cull rate	26.6%	31.4%
Tillable acres, total	529	471
Hay crop, tons DM/acre	2.8	2.8
Corn silage, tons/acre	16.0	14.9
Forage DM/cow, tons	5.3	6.5
Labor & Capital Efficiency		
Worker equivalent	4.62	5.46
Milk sold/worker, lbs.	668,996	825,445
Cows/worker	44	38
Farm capital/worker	$279,740	$256,638
Farm capital/cow	$6,366	$6,769
Farm capital/cwt. milk	$42	$31
Milk Production Costs & Returns		
Selected costs/cwt.:		
Hired labor	$2.29	$2.06
Grain & concentrate	3.75	3.84
Purchased roughage	0.28	0.36
Replacements purchased	0.17	0.39
Vet & medicine	0.41	0.49
Milk marketing	0.68	0.67
Other dairy expenses	1.23	1.52
Operating cost/cwt.	12.24	12.24
Operator resources/cwt.	1.23	1.01
Total labor cost/cwt.	3.82	3.16
Total cost/cwt.	17.25	15.90
Average farm price/cwt.	17.23	15.95
Related Cost Factors		
Hired labor/cow	$349	$449
Total labor/cow	581	688
Purchased dairy feed/cow	613	915
Purchased grain & concentrate as % of milk receipts	22%	24%
Vet & medicine/cow	$63	$106
Machinery costs/cow	$488	$599
Feed & crop exp./cwt.	$4.82	$4.98
Profitability Analysis		
Net farm income (without appreciation)	$100,435	$109,915
Net farm income/cow (without appreciation)	$495	$531
Labor & management income/operator	$30,180	$33,578
Rates of return on:		
Equity capital with appreciation	14.7%	10.3%
All capital with appreciation	12.3%	9.1%

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
54 Intensive Grazing Dairy Farms, 2001

Type of Farm	Number
Dairy	54
Part-time dairy	0
Dairy cash-crop	0

Type of Ownership	Number
Owner	47
Renter	7

Type of Business	Number
Sole Proprietorship	41
Partnership	11
Limited Liability Corporation	1
Subchapter S Corporation	0
Subchapter C Corporation	1

Type of Barn	Number
Stanchion or Tie-Stall	34
Freestall	18
Combination	2

Milking Frequency	Number
2 times per day	51
3 times per day	1
Other	2

Milking System	Number
Bucket & carry	0
Dumping station	2
Pipeline	32
Herringbone-conventional exit	11
Herringbone-rapid exit	0
Parallel	3
Parabone	0
Rotary	0
Other	6

Production Records	Number
Testing Service	38
On-Farm System	1
Other	2
None	13

bST Usage	Number
Used on <25% of herd	4
Used on 25-75% of herd	5
Used on >75% of herd	3
Stopped using in 2001	0
Not used in 2001	42

Business Record System	Number
Account Book	21
Accounting Service	3
On-farm computer software	27
Other	3

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 2001.

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
54 Intensive Grazing Dairy Farms, 2001

Expense Item	Cash Paid	-	Change in Inventory or Prepaid Expense	+	Change in Accounts Payable	=	Accrual Expenses
Hired Labor	$ 25,013		$ 104	<<	$ -275		$ 24,634
Feed							
Dairy grain & concentrate	61,885		1,979		-1,567		58,339
Dairy roughage	6,421		398		158		6,181
Nondairy	214		0		0		213
Machinery							
Machinery hire, rent & lease	6,721		0	<<	44		6,765
Machinery repairs & farm vehicle exp.	15,518		84		-76		15,358
Fuel, oil & grease	5,973		35		-13		5,924
Livestock							
Replacement livestock	3,433		0	<<	130		3,563
Breeding	3,764		114		-74		3,577
Veterinary & medicine	6,364		62		-26		6,276
Milk marketing	11,677		0	<<	85		11,762
Bedding	1,756		-39		-3		1,792
Milking supplies	6,520		8		121		6,633
Cattle lease & rent	455		0	<<	-2		453
Custom boarding	2,057		0	<<	16		2,072
bST expense	1,429		86		5		1,347
Other livestock expense	4,080		92		-3		3,985
Crops							
Fertilizer & lime	6,498		58		-44		6,397
Seeds & plants	2,873		539		-36		2,298
Spray, other crop expense	2,719		-207		-67		2,858
Real Estate							
Land, building & fence repair	5,584		11		24		5,596
Taxes	5,715		36	<<	-56		5,623
Rent & lease	4,695		0	<<	-17		4,677
Other							
Insurance	3,620		0	<<	179		3,799
Utilities (farm share)	7,292		0	<<	-3		7,289
Interest paid	12,558		0	<<	-141		12,417
Miscellaneous	3,710		16		-304		3,390
Total Operating	$ 218,540		$ 3,376		$ -1,946		$ 213,218
Expansion livestock	1,909		0	<<	-44		1,864
Machinery depreciation							15,352
Building depreciation							9,059
TOTAL ACCRUAL EXPENSES							$ 239,493

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 2001 but not paid for. A decrease is subtracted because it represents payment for resources used before 2001.

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
54 Intensive Grazing Dairy Farms, 2001

Receipt Item	Cash Receipts	+	Change in Inventory	+	Change in Accounts Receivable	=	Accrual Receipts
Milk sales	$ 255,049				$ 1,877		$ 256,926
Dairy cattle	12,320		$ 3,298		-1		15,617
Dairy calves	3,845				0		3,845
Other livestock	1,945		1,616		-4		3,556
Crops	1,347		-202		14		1,159
Government receipts	7,027		9 [7]		-940		6,096
Custom machine work	1,208				0		1,208
Gas tax refund	142				0		142
Other	3,417				-2		3,415
Less nonfarm noncash capital**		(-)	270 [8]			(-)	270
Total Receipts	$ 286,299		$ 4,451		$ 943		$ 291,693

[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 2001 for the 2002 crop year in excess of funds earned for 2001. Likewise, a decrease is added to cash government receipts because it represents funds earned for 2001 but received in 2000.

Changes in accounts receivable are calculated by subtracting beginning year balances from end year balances. Payments in January for milk produced in December 2001 compared to January 2001 payments for milk produced in 2000 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.

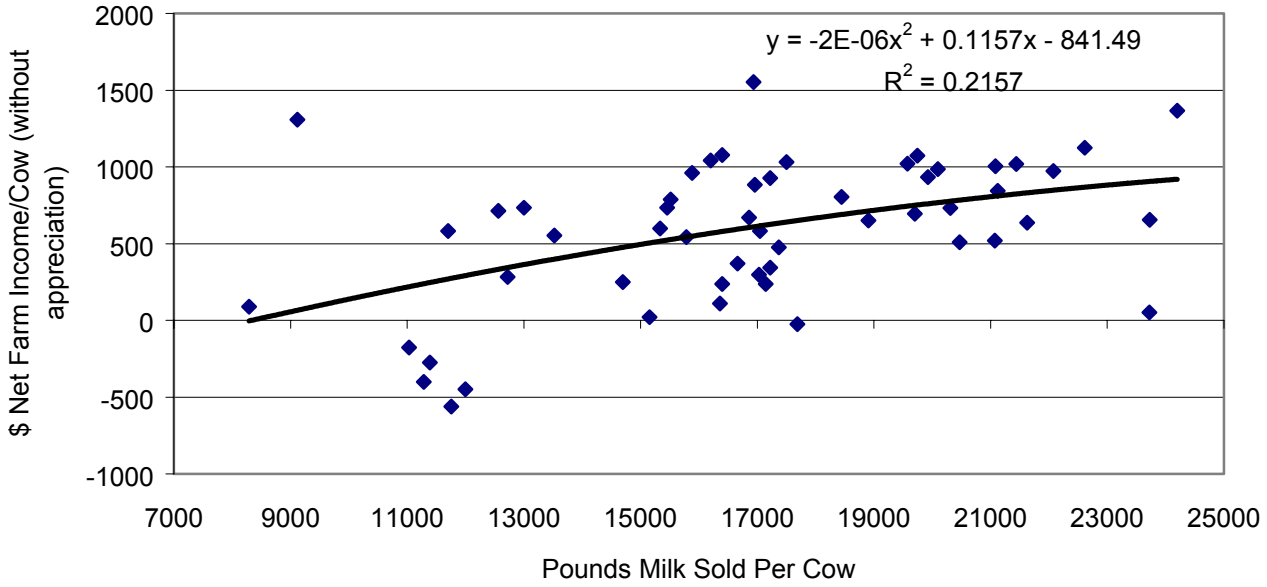
NET FARM INCOME
Intensive Grazing Dairy Farms, 2001

Item	54 Grazing Dairy Farms[10]	19 Above Average Farms[10]	13 Below Average Farms[10]
Total accrual receipts	$ 291,693	$ 331,061	$ 211,695
Appreciation: Livestock	22,425	26,472	16,758
Machinery	1,619	2,045	-734
Real Estate	10,088	13,424	8,169
Other Stock & Certificates	1,161	756	2,880
Total Including Appreciation	$ 326,986	$ 373,758	$ 238,768
Total accrual expenses	- 239,493	- 250,440	- 204,787
Net Farm Income (with appreciation)	$ 87,493	$ 123,318	$ 33,981
Net Farm Income Per Cow (with appreciation)	$ 931	$ 1,233	$ 386
Net Farm Income (without appreciation)	$ 52,200	$ 80,621	$ 6,908
Net Farm Income Per Cow (without appreciation)	$ 555	$ 806	$ 79

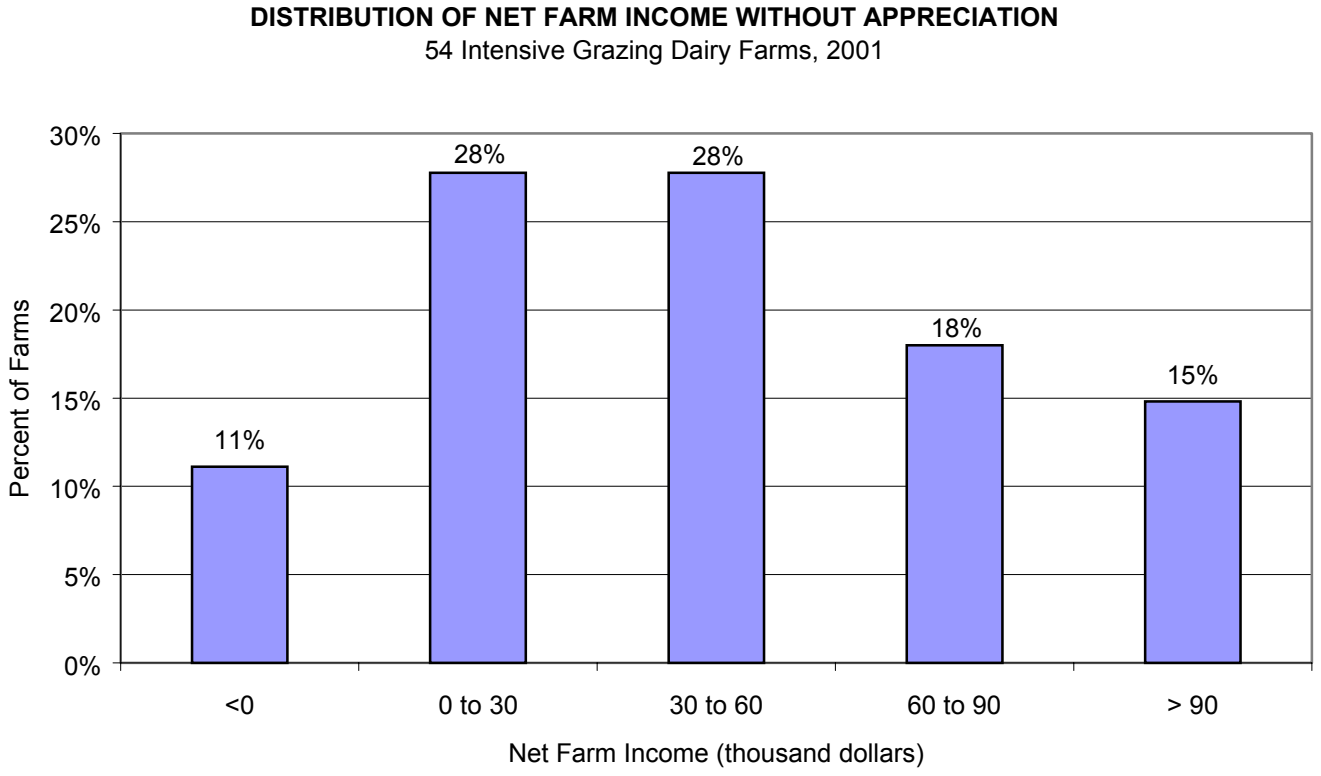
[10]See page 1 for a description of these groups of farms.

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.

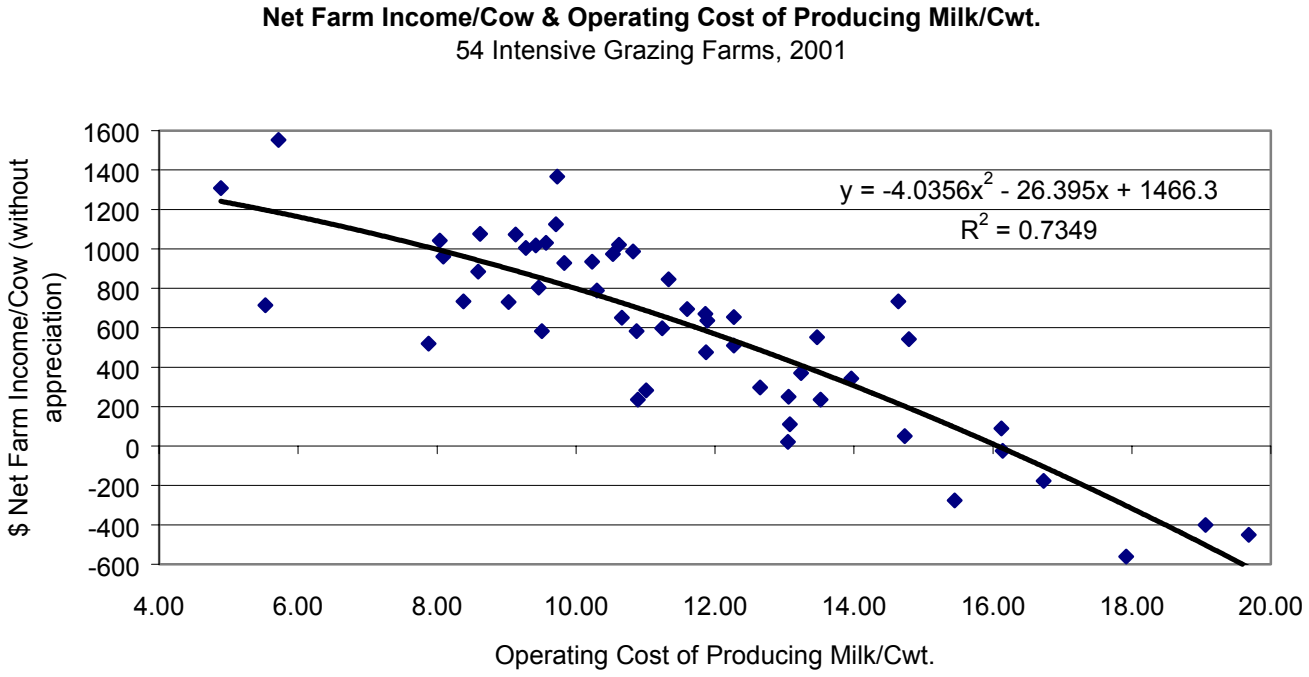
NET FARM INCOME PER COW AND MILK PER COW
54 Intensive Grazing Farms, 2001



Net farm income without appreciation averaged $52,200 on these 54 farms in 2001. The range in net farm income without appreciation was from less than $-60,000 to more than $240,000. Net farm income was less than $30,000 on 39 percent of the farms, between $30,000 and $60,000 on 28 percent of the farms, while 33 percent showed net farm income of $60,000 or more.



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.



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.

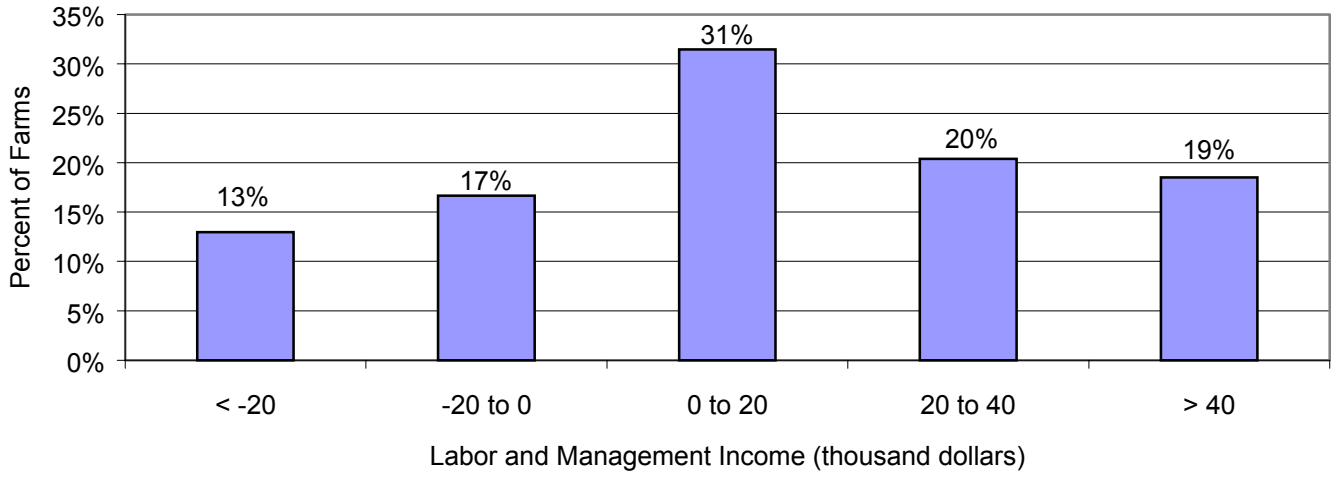
LABOR AND MANAGEMENT INCOME
Intensive Grazing Dairy Farms, 2001

Item	54 Grazing Dairy Farms[11]	19 Above Average Farms[11]	13 Below Average Farms[11]
Net farm income without appreciation	$ 52,200	$ 80,621	$ 6,908
Family labor unpaid @ $2,000 per month	- 8,600	- 8,000	- 2,800
Interest on average equity capital @ 5% real rate	- 22,313	- 21,372	- 18,764
Labor & Management Income per farm	$ 21,287	$ 51,249	$ -14,656
Labor & Management Income per Operator/Manager	$ 15,205	$ 43,431	$ -11,274
Labor & Management Income per Operator per Cow	$ 162	$ 434	$ 128

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

Labor and management income per operator averaged $15,205 on these 54 farms in 2001. The range in labor and management income per operator was from less than $-140,000 to more than $177,000. Returns to labor and management were less than $0 on 30 percent of the farms. Labor and management income per operator was between $0 and $20,000 on 31 percent of the farms while 39 percent showed labor and management incomes of $20,000 or more per operator.

DISTRIBUTION OF LABOR & MANAGEMENT INCOMES PER OPERATOR
54 Intensive Grazing Dairy Farms, 2001



The distribution of labor and management income per operator on grazing farms is very similar to the distribution for all farms across the state that participate in the DFBS project. The largest percentage of farms fall near $0 to $20,000 with a considerable percentage less than zero. One comparison to make to the state distribution is the percentage of farms that were above $20,000 labor and management income per operator. For the intensive grazing farms, 39% of the farms had returns that were over $20,000, while for the 222 farms across the state, 51% had returns greater than $20,000 in 2001.

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, 2001

Item	54 Grazing Dairy Farms[12]	19 Above Average Farms[12]	13 Below Average Farms[12]
Net farm income with appreciation	$ 87,493	$ 123,318	$ 33,981
Family labor unpaid @$2,000 per month	- 8,600	- 8,000	- 2,800
Value of operators' labor & management	- 32,974	- 30,632	- 35,492
Return on equity capital with appreciation	$ 45,919	$ 84,686	$ -4,311
Interest paid	+ 12,417	+ 14,800	+ 15,181
Return on total capital with appreciation	$ 58,336	$ 99,486	$ 10,870
Return on equity capital without appreciation	$ 10,626	$ 41,989	$ -31,384
Return on total capital without appreciation	$ 23,043	$ 56,789	$ -16,203
Rate of return on average equity capital:			
with appreciation	10.3%	19.8%	-1.2%
without appreciation	2.4%	9.8%	-8.4%
Rate of return on average total capital:			
with appreciation	9.1%	15.7%	1.9%
without appreciation	3.6%	8.9%	-2.8%
Net farm income from operations ratio	0.18	0.24	0.03

[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 2001, lease payments were discounted by 7.75 percent to obtain their present value.

Advanced government receipts are included as current liabilities. Government payments received in 2001 that are for participation in the 2002 program are the end year balance and payments received in 2000 for participation in the 2001 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.

2001 FARM BUSINESS & NONFARM BALANCE SHEET
54 Intensive Grazing Dairy Farms, 2001

Farm Assets	Jan. 1	Dec. 31	Farm Liabilities & Net Worth	Jan. 1	Dec. 31
Current			Current		
Farm cash, checking & savings	$ 11,640	$ 12,802	Accounts payable	$ 8,175	$ 6,186
Accounts receivable	17,700	18,642	Operating debt	6,244	4,959
Prepaid expenses	26	166	Short Term	2,681	707
Feed & supplies	38,850	41,884	Advanced govt. receipts	9	0
			Current Portion:		
			Intermediate	12,656	18,372
			Long Term	5,442	7,541
Total Current	$ 68,216	$ 73,494	Total Current	$ 35,207	$ 37,766
Intermediate			Intermediate		
Dairy cows:			Structured debt		
owned	$ 100,818	$ 115,024	1-10 years	$ 69,592	$ 59,559
leased	1,135	813	Financial lease		
Heifers	45,527	57,196	(cattle/machinery)	3,308	2,656
Bulls & other livestock	2,574	4,037	Farm Credit stock	1,197	995
Mach. & equip. owned	117,410	126,639	Total Intermediate	$ 74,097	$ 63,210
Mach. & equip. leased	2,173	1,843			
Farm Credit stock	1,197	995			
Other stock/certificate	4,415	7,779			
Total Intermediate	$ 275,249	$ 314,326			
			Long Term		
Long Term			Structured debt		
Land & buildings:			>10 years	$ 85,969	$ 97,267
owned	$ 267,295	$ 287,460	Financial lease		
leased	0	0	(structures)	0	0
Total Long Term	$ 267,295	$ 287,460	Total Long Term	$ 85,969	$ 97,267
			Total Farm Liab.	$ 195,273	$ 198,243
Total Farm Assets	$ 610,760	$ 675,280	FARM NET WORTH	$ 415,487	$ 477,037

Nonfarm Assets, Liabilities & Net Worth (Average of 37 farms reporting)

Assets	Jan. 1	Dec. 31	Liabilities & Net Worth	Jan. 1	Dec. 31
Personal cash, checking & savings	$ 4,348	$ 6,768	Nonfarm Liabilities	$ 5,501	$ 4,732
Cash value life insurance	4,004	5,307			
Nonfarm real estate	20,942	18,561			
Auto (personal share)	4,877	7,754			
Stocks & bonds	6,493	7,721			
Household furnishings	11,173	13,295			
All other nonfarm assets	1,843	2,147			
Total Nonfarm Assets	$ 53,680	$ 61,553	NONFARM NET WORTH	$ 48,179	$ 56,821

Farm & Nonfarm Assets, Liabilities, and Net Worth[13]	Jan. 1	Dec. 31
Total Assets	$ 664,440	$ 736,833
Total Liabilities	200,774	202,975
TOTAL FARM & NONFARM NET WORTH	$ 463,666	$ 533,858

[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 57 percent on these 10 farms by including deferred taxes.

Deferred taxes on these farms totaled an average of $99,371 roughly one-third of the pretax net worth. Percent equity for the farm decreased from 63 percent to 43 percent when deferred taxes are included on these farms. When examining net worth, especially as a source of cash for retirement or other purposes, deferred taxes become an important consideration. Deferred taxes in this calculation specify that all assets were sold during one tax year. Therefore, tax management strategies such as making sales in more than one year or installment sales warrant careful consideration to reduce income tax liabilities.

CONDENSED BALANCE SHEET INCLUDING DEFERRED TAXES
December 31, 2001
10 Intensive Grazing Dairy Farms, 2001

Assets		Liabilities & Net Worth	
		Current debts & payables	$ 39,620
		Current deferred taxes	10,327
Total Current Assets	$ 46,591	Total Current Liabilities	$ 49,947
		Intermediate debts & leases	$ 50,182
		Intermediate deferred taxes	48,471
Total Inter. Assets	$ 206,973	Total Intermediate Liabilities	$ 98,653
		Long term debts & leases	$ 85,631
		Long term deferred taxes	40,573
Total Long Term Assets	$ 226,572	Total Long Term Liabilities	$ 126,204
TOTAL FARM ASSETS	$ 480,136	TOTAL FARM LIABILITIES	$ 274,804
		Farm Net Worth	$ 205,332
		Percent Equity (Farm)	42.77%
		Nonfarm debts	$ 8,595
		Nonfarm deferred taxes	8,521
Total Nonfarm Assets	$ 62,459	Total Nonfarm Liabilities	$ 17,116
TOTAL ASSETS	$ 542,595	TOTAL LIABILITIES	$ 291,920
		Total Net Worth	$ 250,675
		Percent Equity (Total)	46.20%

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

BALANCE SHEET ANALYSIS

Intensive Grazing Dairy Farms, 2001

Item	54 Grazing Dairy Farms[14]	19 Above Average Farms[14]	13 Below Average Farms[14]
Financial Ratios - Farm:			
Percent equity	71%	68%	66%
Debt/asset ratio: total	0.29	0.32	0.34
long-term	0.34	0.47	0.31
intermediate/current	0.26	0.23	0.38
Leverage Ratio	0.42	0.47	0.52
Current Ratio	1.95	2.01	1.02
Working Capital: $35,728, As % of Expenses	15%	($35,925) 14%	($834) 0%
Farm Debt Analysis:			
Accounts payable as % of total debt	3%	2%	4%
Long-term liabilities as a % of total debt	49%	55%	49%
Current & inter. liabilities as a % of total debt	51%	45%	51%
Cost of term debt (weighted average)	5.9%	6.3%	6.6%

	54 Grazing Dairy Farms		19 Above Average Farms		13 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	$ 2,087	$ 1,358	$ 2,127	$ 1,550	$ 2,346	$ 1,437
Long-term debt	1,024	666	1,173	855	1,149	704
Intermediate & long term	1,689	1,099	1,777	1,294	1,882	1,153
Intermediate & current debt	1,063	692	954	695	1,197	734

[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

54 Intensive Grazing Dairy Farms, 2001

Item	Real Estate		Machinery & Equipment	
Value beginning of year		$ 267,295		$ 117,410
Purchases	$ 21,212[15]		$ 23,900	
Gift & inheritance	+ 5,745		+ 151	
Lost capital	- 5,180			
Sales	- 2,643		- 1,087	
Depreciation	- 9,059		- 15,352	
Net investment		= 10,077		= 7,610
Appreciation		+ 10,088		+ 1,619
Value end of year		$ 287,460		$ 126,639

[15] $8,730 land and $12,482 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, 2001

Item	54 Grazing Dairy Farms[16]		19 Above Average Farms[16]		13 Below Average Farms[16]	
Beginning of year farm net worth		$ 415,487		$ 389,168		$ 358,647
Net farm income w/o appreciation	$ 52,200		$ 80,621		$ 6,908	
+Nonfarm cash income	+ 4,471		+ 3,161		+ 5,893	
-Personal withdrawals & family expenditures excluding nonfarm borrowings	- 37,635		- 45,897		- 23,304	
RETAINED EARNINGS		+$ 19,036		+$ 37,885		+$ -10,503
Nonfarm noncash transfers to farm	$ 6,166		$ 5,178		$ 0	
+Cash used in business from nonfarm capital	+ 5,085		+ 1,164		+ 18,560	
-Note or mortgage from farm real estate sold (nonfarm)	- 0		- 0		- 0	
CONTRIBUTED/ WITHDRAWN CAPITAL		+$ 11,251		+$ 6,342		+$ 18,560
Appreciation	$ 35,293		$ 42,697		$ 27,073	
-Lost capital	- 5,180		- 9,692		- 4,083	
CHANGE IN VALUATION EQUITY		+$ 30,113		+$ 33,005		+$ 22,990
IMBALANCE/ERROR		- $-1,150		- $698		- $-2,220
End of year net worth[17]		=$477,037		=$465,702		=$391,914
Change in Net Worth						
Without appreciation	$ 26,257		$ 33,837		$ 6,194	
With appreciation	$ 61,550		$ 76,534		$ 33,267	

[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
54 Intensive Grazing Dairy Farms, 2001

	Item			Average		
	Cash Flow from Operating Activities					
	Cash farm receipts	$	286,299			
-	Cash farm expenses		218,540			
=	Net cash farm income			$ 67,759		
	Personal withdrawals & family expenses including nonfarm debt payments	$	37,635			
-	Nonfarm income		4,471			
-	Net cash withdrawals from the farm			$ 33,164		
=	Net Provided by Operating Activities				$	34,595
	Cash Flow From Investing Activities					
	Sale of assets: machinery	$	1,087			
	+ real estate		2,643			
	+ other stock & cert.		201			
=	Total asset sales			$ 3,931		
	Capital purchases: expansion livestock	$	1,909			
	+ machinery		23,900			
	+ real estate		21,212			
	+ other stock& cert.		2,404			
-	Total invested in farm assets			$ 49,425		
=	Net Provided by Investment Activities				$	-45,494
	Cash Flow From Financing Activities					
	Money borrowed (intermediate & long term)	$	36,975			
+	Money borrowed (short term)		766			
+	Increase in operating debt		0			
+	Cash from nonfarm capital used in business		5,085			
+	Money borrowed - nonfarm		0			
=	Cash inflow from financing			$ 42,826		
	Principal payments (intermediate & long term)	$	27,895			
+	Principal payments (short term)		2,741			
+	Decrease in operating debt		1,285			
-	Cash outflow for financing			$ 31,921		
=	Net Provided by Financing Activities				$	10,905
	Cash Flow From Reserves					
	Beginning farm cash, checking & savings			$ 11,640		
-	Ending farm cash, checking & savings			12,802		
=	Net Provided from Reserves				$	-1,162
	Imbalance (error)				$	-1,156

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 2002. The cash flow projection worksheet on the next page can be used to estimate repayment ability, which can then be compared to planned 2002 debt payments shown below.

FARM DEBT PAYMENTS PLANNED

Same Intensive Grazing Dairy Farms, 2000 & 2001

	Same 47 Grazing			Same 17 Above Average Farms			Same 11 Below Average Farms		
	2001 Payments		Planned	2001 Payments		Planned	2001 Payments		Planned
Debt Payments	Planned	Made	2002	Planned	Made	2002	Planned	Made	2002
Long term	$ 11,060	$ 13,585	$ 13,574	$ 11,932	$ 17,647	$ 18,103	$ 12,632	$ 12,969	$ 11,925
Intermediate term	24,411	25,104	23,994	30,554	26,688	25,276	19,928	23,211	21,245
Short term	2,220	2,785	614	3,309	3,507	64	2,922	4,095	1,092
Operating (net reduction)	427	1,836	437	199	6,441	59	0	0	1,402
Accounts Pay. (net reduction)	320	2,647	66	560	3,857	0	0	2,807	0
Total	$ 38,438	$ 45,957	$38,685	$ 46,554	$ 58,140	$ 43,502	$ 35,482	$43,082	$ 35,664
Per cow	$ 400	$ 479		$ 439	$ 548		$ 479	$ 582	
Per cwt. 2001 milk	$ 2.35	$ 2.81		$ 2.64	$ 3.30		$ 3.07	$ 3.73	
Percent of total 2001 farm receipts	12%	15%		13%	17%		18%	21%	
Percent of 2001 milk receipts	14%	17%		15%	19%		19%	23%	

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 2001 (as of December 31, 2000) that could have been made with the amount available for debt service in 2001. Farmers who did not participate in DFBS in 2000 have their 2001 coverage ratios based on planned debt payments for 2002.

COVERAGE RATIOS

Same Intensive Grazing Dairy Farms, 2000 & 2001

Item	Average	Item	Average
Same 47 Grazing Dairy Farms, 2000 & 2001			
(A)=Amount Available for Debt Service	$ 49,527	(A')=Repayment Capacity	$ _ 59,854
(B)=Debt Payments Planned for 2001	$ 38,438	(B)=Debt Payments Planned for 2001	$ 38,438
(A/B)=Cash Flow Coverage Ratio for 2001	1.29	(A'/B)=Debt Coverage Ratio for 2001	1.56
Same 17 Above Average Farms, 2000 & 2001			
(A)=Amount Available for Debt Service	$ 68,133	(A')=Repayment Capacity	$ 88,032
(B)=Debt Payments Planned for 2001	$ 46,554	(B)=Debt Payments Planned for 2001	$ 46,554
(A/B)=Cash Flow Coverage Ratio for 2001	1.46	(A'/B)=Debt Coverage Ratio for 2001	1.89
Same 11 Below Average Farms, 2000 & 2001			
(A)=Amount Available for Debt Service	$ 27,636	(A')=Repayment Capacity	$ 23,427
(B)=Debt Payments Planned for 2001	$ 35,482	(B)=Debt Payments Planned for 2001	$ 35,482
(A/B)=Cash Flow Coverage Ratio for 2001	0.78	(A'/B)=Debt Coverage Ratio for 2001	0.66

ANNUAL CASH FLOW WORKSHEET

Intensive Grazing Dairy Farms, 2001

Item	54 Grazing Dairy Farms		19 Above Average Farms		13 Below Average Farms	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average no. of cows	94		100		88	
Total cwt. of milk sold		15,396		16,637		11,958
Accrual Oper. Receipts						
Milk	$ 2,733	$ 16.69	$ 2,868	$ 17.24	$ 2,261	$ 16.64
Dairy cattle	166	1.01	228	1.37	59	0.44
Dairy calves	41	0.25	41	0.25	36	0.27
Other livestock	38	0.23	59	0.36	16	0.12
Crops	12	0.08	6	0.04	-37	-0.27
Misc. Receipts	113	0.69	108	0.65	70	0.51
Total	$ 3,103	$ 18.95	$ 3,311	$ 19.90	$ 2,406	$ 17.70
Accrual Operating Expenses						
Hired labor	$ 262	$ 1.60	$ 305	$ 1.83	$ 262	$ 1.93
Dairy grain & concentrate	621	3.79	537	3.23	506	3.72
Dairy roughage	66	0.40	63	0.38	105	0.77
Nondairy feed	2	0.01	0	0.00	1	0.01
Mach. hire, rent & lease	72	0.44	53	0.32	105	0.77
Mach. repair & vehicle expense	163	1.00	170	1.02	118	0.87
Fuel, oil & grease	63	0.38	56	0.34	51	0.38
Replacement livestock	38	0.23	49	0.30	28	0.20
Breeding	38	0.23	33	0.20	39	0.28
Vet & medicine	67	0.41	58	0.35	57	0.42
Milk marketing	125	0.76	121	0.73	114	0.84
Bedding	19	0.12	17	0.10	18	0.13
Milking supplies	71	0.43	59	0.35	59	0.43
Cattle lease	5	0.03	0	0.00	0	0.00
Custom boarding	22	0.13	17	0.10	50	0.37
bST expense	14	0.09	12	0.08	7	0.05
Other livestock expense	42	0.26	31	0.18	39	0.29
Fertilizer & lime	68	0.42	70	0.42	50	0.37
Seeds & plants	24	0.15	23	0.14	24	0.17
Spray & other crop expense	30	0.19	17	0.10	20	0.14
Land, bldg., fence repair	60	0.36	69	0.41	39	0.29
Taxes	60	0.37	53	0.32	67	0.49
Real estate rent & lease	50	0.30	40	0.24	39	0.29
Insurance	40	0.25	40	0.24	29	0.21
Utilities	78	0.47	67	0.41	71	0.52
Miscellaneous	36	0.22	44	0.26	32	0.24
Total Less Interest Paid	$ 2,136	$ 13.04	$ 2,007	$ 12.06	$ 1,928	$ 14.19
Net Accrual Operating Income	Total		Total		Total	
(without interest paid)	$ 90,892		$ 130,395		$ 42,028	
- Change in livestock & crop invent.[18]	4,451		11,539		-11,143	
- Change in accounts receivable	943		3,916		1,432	
- Change in feed & supply inventory[19]	3,376		4,285		2,193	
+ Change in accounts payable[20]	-1,805		-4,025		-2,003	
NET CASH FLOW	$ 80,317		$ 106,630		$ 47,543	
- Net family withdrawals	- 33,164		- 42,736		- 17,412	
Available for Farm	$ 47,153		$ 63,894		$ 30,131	
- Farm debt payments	- 44,679		- 56,902		- 47,150	
Available for Farm Investment	$ 2,474		$ 6,992		$-17,019	
- Capital purchases	$ 49,425		$ 81,961		$ 31,240	
Additional Capital Needed	$ -46,951		$ 74,969		$ 48,259	

[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, 2001

Item	54 Grazing Dairy Farms			19 Above Average Farms			13 Below Average Farms		
Land	Owned	Rented	Total	Owned	Rented	Total	Owned	Rented	Total
Tillable	146	142	288	140	108	249	142	92	234
Nontillable	36	20	56	36	5	41	34	18	53
Other nontill.	75	14	89	79	18	97	78	13	91
Total	257	176	433	255	131	387	254	124	378
Crop Yields	Farms	Acres[2] [1]	Prod/Acre	Farms	Acres[2] [1]	Prod/Acre	Farms	Acres[2] [1]	Prod/Acre
Hay crop	51	161	2.2 tn DM	17	140	2.5 tn DM	12	114	2.3 tn DM
Corn silage	33	61	15.5 tn	9	28	12.3 tn	6	44	15.6 tn
			5.2 tn DM			4.4 tn DM			5.1 tn DM
Other forage	4	25	2.4 tn DM	4	25	2.4 tn DM	0	0	0.0 tn DM
Total forage	51	202	2.8 tn DM	17	160	2.7 tn DM	12	136	2.8 tn DM
Corn grain	14	36	92 bu	6	26	94 bu	2	13	93 bu
Oats	1	27	66 bu	1	27	66 bu	0	0	0 bu
Wheat	1	18	50 bu	1	18	50 bu	0	0	0 bu
Other crops	8	42		2	40		2	66	
Tillable pasture	39	103		15	114		11	104	
Idle	12	27		1	22		5	21	
Total Tillable Acres	54	288		19	249		13	234	

[21]This column represents the average acreage for the farms producing that crop. For the 54 New York dairy farms, average acreages including those farms not producing were hay crop 152, corn silage 37, corn grain 9, oats 1, wheat 0, tillable pasture 74, 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, 2001

Item	54 Grazing Dairy Farms[22]	19 Above Average Farms[22]	13 Below Average Farms[22]
Total tillable acres per cow	3.06	2.49	2.66
Total forage acres per cow	2.03	1.43	1.43
Harvested forage dry matter, tons per cow	5.67	3.88	3.93

[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, 2001

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	54	8			11		6	
Ave. number of acres	288	76			125		52	97
Fert. & lime	$ 22.21	$ 46.36	$ 8.97	$ 0.42	$ 22.61	$ 8.46	$ 14.96	$ 8.02
Seeds & plants	7.98	22.75	4.40	0.21	9.87	3.69	3.67	1.97
Spray & other	9.92	35.29	6.83	0.32	7.19	2.69	0.00	0.00
TOTAL	$ 40.11	$ 104.40	$ 20.20	$ 0.95	$ 39.67	$ 14.84	$ 18.63	$ 9.99
Above Average Grazing Farms								
No. of farms reporting	19	- - - - - - NONE REPORTED - - - - -			2		2	
Ave. number of acres	249				97		21	73
Fert. & lime	$ 28.22				$ 49.51	$ 15.10	$ 33.52	$ 9.51
Seeds & plants	9.36				0.00	0.00	11.10	3.15
Spray & other	6.79				0.00	0.00	0.00	0.00
TOTAL	$ 44.37				$ 49.51	$ 15.10	$ 44.62	$ 12.66
Below Average Grazing Farms								
No. of farms Reporting	13	2			3		2	
Ave. number of acres	234	82			65		90	145
Fert. & lime	$ 18.69	$ 22.06	$ 3.92	$ 0.00	$ 29.55	$ 7.94	$ 2.54	$ 1.58
Seeds & plants	8.94	42.12	7.49	0.00	33.89	9.10	3.79	2.35
Spray & other	7.36	29.65	5.27	0.00	30.11	8.09	0.00	0.00
TOTAL	$ 34.99	$ 93.83	$ 16.68	0.00	$ 93.55	$ 25.13	$ 6.33	$ 3.93

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, 2001

Machinery Expense	54 Grazing Dairy[23] Total Expenses	54 Grazing Dairy[23] Per Till. Acre	19 Above Average Farms[23] Total Expenses	19 Above Average Farms[23] Per Till. Acre	13 Below Average Farms[23] Total Expenses	13 Below Average Farms[23] Per Till. Acre
Fuel, oil & grease	$ 5,924	$ 20.57	$ 5,608	$ 22.52	$ 4,509	$ 19.27
Mach. repair & vehicle exp.	15,358	53.33	17,001	68.28	10,365	44.29
Machine hire, rent & lease	6,765	23.49	5,346	21.47	9,230	39.44
Interest (5%)	6,202	21.53	7,382	29.65	3,773	16.12
Depreciation	15,352	53.31	17,959	72.12	11,118	47.51
Total	$ 49,601	$ 172.23	$ 53,296	$ 214.04	$ 38,995	$ 166.65

[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, 2001

	Dairy Cows		Bred Heifers		Open Heifers		Calves	
Item	No.	Value	No.	Value	No.	Value	No.	Value
54 Grazing Dairy Farms[24]								
Beg. year (owned)	93	$ 100,818	25	$ 24,135	26	$ 16,233	16	$ 5,158
+ Change w/o apprec.		1,480		-112		1,328		603
+ Appreciation		12,726		4,474		3,203		2,173
End year (owned)	94	$ 115,024	24	$ 28,497	29	$ 20,764	18	$ 7,934
End including leased	95							
Average number	94		70	(all age groups)				
19 Above Average Dairy Farms[24]								
Beg. year (owned)	96	$ 105,673	28	$ 26,176	26	$ 15,445	15	$ 5,025
+ Change w/o apprec.		5,660		1,653		1,376		-1,203
+ Appreciation		17,872		5,239		2,358		1,541
End year (owned)	102	$ 129,205	28	$ 33,068	29	$ 19,179	11	$ 5,363
End including leased	102							
Average number	100		71	(all age groups)				
13 Below Average Dairy Farms[24]								
Beg. year (owned)	90	$ 93,235	25	$ 24,627	23	$ 14,454	12	$ 3,517
+ Change w/o apprec.		-3,027		-6,512		-1,966		3,598
+ Appreciation		7,715		2,600		2,389		4,008
End year (owned)	87	$ 97,923	19	$ 20,715	20	$ 14,877	25	$ 11,123
End including leased	87							
Average number	88		63	(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, 2001

Item	54 Grazing Dairy Farms	19 Above Average Dairy Farms	13 Below Average Dairy Farms
Total milk sold, lbs.	1,539,616	1,663,668	1,195,778
Milk sold per cow, lbs.	16,295	16,698	13,660
Average milk plant test, percent butterfat	3.71%	3.63%	3.78%

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, 2001

	54 Grazing Dairy Farms		19 Above Average Dairy Farms		13 Below Average Dairy Farms	
Item	Number	Percent[25]	Number	Percent[25]	Number	Percent[25]
Cows sold for beef	20	21.3	17	17.0	20	22.7
Cows sold for dairy	4	4.3	8	8.0	1	1.1
Cows died	5	5.3	4	4.0	4	4.5
Culling rate[26]		26.6		21.0		27.3

[25]Percent of average number of cows in the herd. [26]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, 2001

	54 Grazing Dairy Farms[27]		19 Above Average Dairy Farms[27]		13 Below Average Dairy Farms[27]	
Item	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Accrual Cost of Producing Milk						
Operating costs	$ 1,918	$ 11.71	$ 1,760	$ 10.58	$ 1,957	$ 14.40
Purchased inputs costs	$ 2,178	$ 13.30	$ 2,062	$ 12.39	$ 2,183	$ 16.06
Total Costs	$ 2,858	$ 17.45	$ 2,662	$ 16.00	$ 2,831	$ 20.83
Accrual Receipts From Milk	$ 2,733	$ 16.69	$ 2,868	$ 17.24	$ 2,261	$ 16.64
Net milk receipts	$ 2,608	$ 15.92	$ 2,747	$ 16.51	$ 2,147	$ 15.80
Net Farm Income without Apprec.	$ 555	$ 3.39	$ 806	$ 4.85	$ 79	$ 0.58
Net Farm Income with Apprec.	$ 931	$ 5.68	$ 1,233	$ 7.41	$ 386	$ 2.84

[27] 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, 2001

	54 Grazing Dairy Farms		19 Above Average Dairy Farms		13 Below Average Dairy Farms	
Item	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Purchased dairy grain & concentrate	$ 621	$ 3.79	$ 537	$ 3.23	$ 506	$ 3.72
Purchased dairy roughage	66	0.40	63	0.38	105	0.77
Total Purchased Dairy Feed	$ 687	$ 4.19	$ 601	$ 3.61	$ 611	$ 4.49
Purchased grain & conc. as % of milk receipts	23%		19%		22%	
Purchased feed & crop exp.	$ 809	$ 4.94	$ 711	$ 4.28	$ 703	$ 5.18
Purchased feed & crop exp. as % of milk receipts	30%		25%		31%	
Breeding	$ 38	$ 0.23	$ 33	$ 0.20	$ 39	$ 0.28
Veterinary & medicine	67	0.41	58	0.35	57	0.42
Milk marketing	125	0.76	121	0.73	114	0.84
Bedding	19	0.12	17	0.10	18	0.13
Milking supplies	71	0.43	59	0.35	59	0.43
Cattle lease	5	0.03	0	0.00	0	0.00
Custom boarding	22	0.13	17	0.10	50	0.37
bST expense	14	0.09	12	0.08	7	0.05
Other livestock expense	42	0.26	31	0.18	39	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, 2001

Item	Per Worker	Per Cow	Per Tillable Acre	Per Tillable Acre Owned
54 Grazing Dairy Farms[28]				
Farm capital	$ 231,302	$ 6,841	$ 2,233	$ 4,404
Real estate		2,951		1,900
Machinery & equipment	44,616	1,319	431	
Ratios:				
Asset Turnover Ratio	Operating Expense	Interest Expense		Depreciation Expense
0.51	0.69	0.04		0.08
19 Above Average Dairy Farms[28]				
Farm capital	$ 224,440	$ 6,352	$ 2,551	$ 4,537
Real estate		2,394		1,710
Machinery & equipment	52,166	1,476	593	
Ratios:				
Asset Turnover Ratio	Operating Expense	Interest Expense		Depreciation Expense
0.59	0.62	0.04		0.09
13 Below Average Dairy Farms[28]				
Farm capital	$ 253,243	$ 6,619	$ 2,489	$ 4,102
Real estate		3,599		2,230
Machinery & equipment	32,805	857	322	
Ratios:				
Asset Turnover Ratio	Operating Expense	Interest Expense		Depreciation Expense
0.41	0.80	0.07		0.09

[28] 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, 2001

Labor Force	Months	Age	Years of Educ.	Value of Labor & Mgmt.
54 Grazing Dairy Farms				
Operator number 1	13.1	47	14	$ 25,760
Operator number 2	3.8	44	13	6,658
Operator number 3	0.2	44	12	556
Family paid	2.7			
Family unpaid	4.3			
Hired	9.4			
Total	33.3	/ 12 = 2.78 Worker Equivalent		
		1.40 Operator/Manager Equivalent		
19 Above Average Dairy Farms				
Total Labor Force	34.0	/ 12 = 2.83 Worker Equivalent		
Operator's Labor		1.18 Operator/Manager Equivalent		
13 Below Average Dairy Farms				
Total Labor Force	27.6	/ 12 = 2.30 Worker Equivalent		
Operator's Labor		1.30 Operator/Manager Equivalent		

Labor Efficiency	54 Grazing Dairy Farms		19 Above Average Dairy Farms		13 Below Average Dairy Farms	
	Total	Per Worker	Total	Per Worker	Total	Per Worker
Cows, average number	94	34	100	35	88	38
Milk sold, pounds	1,539,616	553,819	1,663,668	587,869	1,195,778	519,903
Tillable acres	288	104	249	88	234	102
Work units	937	337	952	336	831	361

Labor Costs	54 Grazing Dairy Farms		19 Above Average Dairy Farms		13 Below Average Dairy Farms	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Value of operator(s) labor ($2,000/mo.)	$ 364	$ 2.22	$ 304	$ 1.83	$ 384	$ 2.83
Family unpaid ($2,000/mo.)	91	0.56	80	0.48	32	0.23
Hired	262	1.60	305	1.83	262	1.93
Total Labor	$ 717	$ 4.38	$ 689	$ 4.14	$ 678	$ 4.99
Machinery Cost	$ 528	$ 3.22	$ 533	$ 3.20	$ 443	$ 3.26
Total Labor & Mach.	$ 1,245	$ 7.60	$ 1,221	$ 7.34	$ 1,121	$ 8.25
Hired labor expense per hired worker equivalent	$ 24,430		$ 24,689		$ 30,051	
Hired labor expense as % of milk sales	9.6%		10.6%		11.6%	

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, 2000 & 2001[29]

	Same 47 Grazing Dairy Farms		Same 17 Above Average Dairy Farms		Same 11 Below Average Dairy Farms	
Selected Factors	2000	2001	2000	2001	2000	2001
Size of Business						
Average number of cows	95	96	102	106	73	74
Average number of heifers	71	74	73	76	54	58
Milk sold, lbs.	1,633,324	1,637,760	1,709,013	1,760,373	1,176,321	1,154,068
Worker equivalent	2.77	2.88	2.82	2.95	2.27	2.27
Total tillable acres	284	291	253	267	204	209
Rates of Production						
Milk sold per cow, lbs.	17,220	16,973	16,726	16,672	16,195	15,673
Hay DM per acre, tons	2.7	2.3	3.4	2.6	2.2	1.9
Corn silage per acre, tons	11.2	15.6	14.7	13.1	13.7	16.6
Labor Efficiency						
Cows per worker	34	33	36	36	32	33
Milk sold/worker, lbs.	589,648	568,667	606,033	596,737	518,203	508,400
Cost Control						
Grain & conc. purchased as % of milk sales	27%	23%	24%	19%	27%	24%
Dairy feed & crop exp. per cwt. milk	$ 4.74	$ 4.94	$ 4.29	$ 4.30	$ 5.01	$ 5.23
Labor & mach. costs/cow	$ 1,151	$ 1,283	$ 1,157	$ 1,209	$ 1,129	$ 1,324
Operating cost of producing cwt. of milk	$ 10.02	$ 11.62	$ 9.68	$ 10.76	$ 10.70	$ 13.95
Capital Efficiency[30]						
Farm capital per cow	$ 6,520	$ 7,027	$ 5,900	$ 6,304	$ 7,266	$ 7,782
Mach. & equip. per cow	$ 1,281	$ 1,392	$ 1,363	$ 1,454	$ 1,024	$ 1,068
Asset turnover ratio	0.46	0.52	0.52	0.59	0.40	0.40
Profitability						
Net farm income w/o apprec.	$ 34,148	$ 56,214	$ 36,062	$ 82,445	$ 21,200	$ 7,734
Net farm income w/apprec.	$ 47,742	$ 95,289	$ 53,271	$ 129,358	$ 31,727	$ 38,499
Labor & mgt. income per operator/manager	$ 3,403	$ 16,369	$ 7,225	$ 44,634	$ -1,358	$ -11,703
Rate of return on equity capital w/appreciation	1.8%	11.0%	4.0%	20.1%	-0.2%	0.6%
Rate of return on all capital w/appreciation	3.3%	9.6%	5.1%	15.9%	2.4%	2.7%
Financial Summary						
Farm net worth, end year	$ 440,897	$ 513,323	$ 407,210	$ 491,770	$ 379,591	$ 421,331
Debt to asset ratio	0.30	0.28	0.34	0.32	0.31	0.29
Farm debt per cow	$ 1,987	$ 2,036	$ 2,010	$ 2,118	$ 2,263	$ 2,301

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

RECEIPTS AND EXPENSES PER COW AND PER CWT.
Same 47 Intensive Grazing Dairy Farms, 2000 & 2001

	2000		2001	
Item	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average Number of Cows	95		96	
Cwt. Of Milk Sold		16,333		16,378
ACCRUAL OPERATING RECEIPTS				
Milk	$ 2,325	$ 13.52	$ 2,842	$ 16.66
Dairy cattle	190	1.11	170	1.00
Dairy calves	37	0.21	38	0.22
Other livestock	23	0.13	31	0.18
Crops	40	0.23	17	0.10
Miscellaneous receipts	260	1.51	114	0.67
Total Receipts	$ 2,875	$ 16.72	$ 3,212	$ 18.83
ACCRUAL OPERATING EXPENSES				
Hired labor	$ 234	$ 1.36	$ 275	$ 1.61
Dairy grain & concentrate	619	3.60	659	3.86
Dairy roughage	69	0.40	59	0.35
Nondairy feed	1	0.01	2	0.01
Machine hire/rent/lease	79	0.46	72	0.42
Mach. repair & vehicle exp.	133	0.77	173	1.02
Fuel, oil & grease	70	0.41	64	0.38
Replacement livestock	36	0.21	30	0.17
Breeding	36	0.21	40	0.23
Veterinary & medicine	68	0.40	69	0.40
Milk marketing	147	0.85	131	0.77
Bedding	17	0.10	18	0.11
Milking supplies	65	0.38	72	0.42
Cattle lease	8	0.05	5	0.03
Custom boarding	14	0.08	19	0.11
bST expense	16	0.09	16	0.09
Other livestock expense	35	0.20	45	0.27
Fertilizer & lime	61	0.36	67	0.39
Seeds & plants	33	0.19	26	0.15
Spray/other crop expense	32	0.19	31	0.18
Land, building, fence repair	51	0.30	60	0.35
Taxes	65	0.38	62	0.36
Real estate rent/lease	58	0.34	49	0.29
Insurance	42	0.24	41	0.24
Utilities	76	0.44	80	0.47
Interest paid	133	0.77	128	0.75
Miscellaneous	31	0.18	35	0.21
Total Operating Expenses	$ 2,229	$ 12.97	$ 2,330	$ 13.66
Expansion Livestock	45	0.26	22	0.13
Machinery Depreciation	145	0.84	173	1.02
Real Estate Depreciation	97	0.57	101	0.59
Total Expenses	$ 2,516	$ 14.63	$ 2,626	$ 15.39
Net Farm Income Without Appreciation	$ 359	$ 2.09	$ 586	$ 3.43

RECEIPTS AND EXPENSES PER COW AND PER CWT.
Same 17 Above Average Intensive Grazing Dairy Farms, 2000 & 2001

	2000		2001	
Item	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average Number of Cows	102		106	
Cwt. Of Milk Sold		17,090		17,604
ACCRUAL OPERATING RECEIPTS				
Milk	$ 2,259	$ 13.48	$ 2,870	$ 17.28
Dairy cattle	287	1.71	224	1.35
Dairy calves	41	0.25	39	0.23
Other livestock	29	0.17	63	0.38
Crops	28	0.17	7	0.04
Miscellaneous receipts	231	1.38	102	0.61
Total Receipts	$ 2,875	$ 17.16	$ 3,304	$ 19.89
ACCRUAL OPERATING EXPENSES				
Hired labor	$ 287	$ 1.71	$ 320	$ 1.92
Dairy grain & concentrate	534	3.19	545	3.28
Dairy roughage	67	0.40	59	0.36
Nondairy feed	0	0.00	0	0.00
Machine hire/rent/lease	57	0.34	55	0.33
Mach. repair & vehicle exp.	141	0.84	170	1.02
Fuel, oil & grease	62	0.37	56	0.34
Replacement livestock	56	0.33	46	0.28
Breeding	34	0.21	34	0.20
Veterinary & medicine	63	0.37	59	0.36
Milk marketing	162	0.97	123	0.74
Bedding	15	0.09	18	0.11
Milking supplies	50	0.30	57	0.35
Cattle lease	12	0.07	0	0.00
Custom boarding	11	0.06	18	0.11
bST expense	15	0.09	13	0.08
Other livestock expense	29	0.17	31	0.18
Fertilizer & lime	65	0.39	74	0.44
Seeds & plants	34	0.20	25	0.15
Spray/other crop expense	20	0.12	12	0.07
Land, building, fence repair	34	0.20	69	0.42
Taxes	49	0.29	51	0.31
Real estate rent/lease	64	0.38	41	0.25
Insurance	32	0.19	40	0.24
Utilities	69	0.41	66	0.39
Interest paid	148	0.89	146	0.88
Miscellaneous	42	0.25	45	0.27
Total Operating Expenses	$ 2,153	$ 12.85	$ 2,170	$ 13.07
Expansion Livestock	85	0.51	50	0.30
Machinery Depreciation	177	1.06	180	1.08
Real Estate Depreciation	107	0.64	125	0.75
Total Expenses	$ 2,522	$ 15.05	$ 2,526	$ 15.21
Net Farm Income Without Appreciation	$ 354	$ 2.11	$ 778	$ 4.68

RECEIPTS AND EXPENSES PER COW AND PER CWT.
Same 11 Below Average Intensive Grazing Dairy Farms, 2000 & 2001

	2000		2001	
Item	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average Number of Cows	73		74	
Cwt. Of Milk Sold		11,763		11,541
ACCRUAL OPERATING RECEIPTS				
Milk	$ 2,233	$ 13.86	$ 2,569	$ 16.47
Dairy cattle	202	1.25	64	0.41
Dairy calves	30	0.19	33	0.21
Other livestock	21	0.13	21	0.14
Crops	29	0.18	-31	-0.20
Miscellaneous receipts	226	1.41	77	0.49
Total Receipts	$ 2,741	$ 17.01	$ 2,733	$ 17.52
ACCRUAL OPERATING EXPENSES				
Hired labor	$ 217	$ 1.35	$ 275	$ 1.76
Dairy grain & concentrate	596	3.70	622	3.99
Dairy roughage	113	0.70	109	0.70
Nondairy feed	4	0.03	0	0.00
Machine hire/rent/lease	116	0.72	117	0.75
Mach. repair & vehicle exp.	111	0.69	144	0.92
Fuel, oil & grease	62	0.38	60	0.39
Replacement livestock	18	0.11	38	0.25
Breeding	34	0.21	42	0.27
Veterinary & medicine	61	0.38	59	0.38
Milk marketing	131	0.81	130	0.84
Bedding	18	0.11	18	0.12
Milking supplies	55	0.34	67	0.43
Cattle lease	0	0.00	0	0.00
Custom boarding	33	0.21	41	0.26
bST expense	11	0.07	10	0.07
Other livestock expense	36	0.22	47	0.30
Fertilizer & lime	36	0.22	28	0.18
Seeds & plants	27	0.17	29	0.19
Spray/other crop expense	35	0.22	27	0.17
Land, building, fence repair	52	0.32	37	0.24
Taxes	81	0.50	81	0.52
Real estate rent/lease	28	0.17	30	0.19
Insurance	45	0.28	35	0.22
Utilities	77	0.48	84	0.54
Interest paid	180	1.12	178	1.14
Miscellaneous	19	0.12	29	0.19
Total Operating Expenses	$ 2,195	$ 13.62	$ 2,339	$ 15.00
Expansion Livestock	37	0.23	1	0.01
Machinery Depreciation	110	0.68	165	1.05
Real Estate Depreciation	109	0.68	123	0.79
Total Expenses	$ 2,451	$ 15.21	$ 2,629	$ 16.85
Net Farm Income Without Appreciation	$ 290	$ 1.80	$ 105	$ 0.67

Grazing Farm Business Chart

The Farm Business Chart is a tool, which can be used in analyzing your business. Compare your business by drawing a line through or near the figure in each column, which represents your current level of performance. The five figures in each column represent the average of each 20 percent or quintile of farms included in the regional summary. Use this information to identify business areas where more challenging goals are needed.

FARM BUSINESS CHART FOR FARM MANAGEMENT COOPERATORS
54 Intensive Grazing Dairy Farms, 2001

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)[31]	(11)	(11)	(10)	(9)	(9)	(11)	(11)
5.36	234	3,612,329	22,268	4.1	20	55	896,788
3.21	98	1,690,485	19,306	2.8	18	37	645,166
2.30	66	1,170,268	16,985	2.1	15	30	488,047
1.92	50	881,549	15,482	1.6	13	24	406,248
1.35	37	531,880	11,351	1.0	8	19	301,930

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)
$327	13%	$269	$873	$421	$2.93
541	21	444	1,185	725	4.43
675	24	546	1,348	882	4.98
775	27	665	1,574	1,012	5.71
956	33	840	1,931	1,248	7.19

Value and Cost of Production			Profitability			
Milk Receipts Per Cow	Oper. Cost Milk Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income w/Apprec.	Net Farm Inc. w/o Apprec.	Labor & Mgt. Inc. Per Oper.	Change in Net Worth w/Apprec.
(10)	(10)	(10)	(3)	(3)	(3)	(6)
$3,601	$7.63	$13.80	$263,260	$149,576	$87,467	$216,368
3,109	9.78	15.78	90,063	67,929	27,918	62,804
2,827	11.16	17.41	58,792	41,737	13,500	34,713
2,507	12.95	19.08	36,703	21,043	2,792	18,498
1,861	16.53	24.64	4,617	-10,439	-40,970	-10,545

[31]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
81 New York Dairy Farms, 2001

Animals Entering Herd	Average
Number calving in 2001 for first time	132
Animals purchased, %[32]	18%
Animals raised by farm, %[33]	82%
Current Heifer Inventory	
Raised on dairy, %	81%
Raised by a custom grower, %	19%

[32]Animals purchased are animals purchased from a different farm and were not the farm's genetics.
[33]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, 132 animals calved for the first time in 2001. The breakdown on these animals for source was 18% purchased and 82% raised by the farm. Of the current heifer inventory, 81% were raised on the dairy and 19% 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, 24 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[34] MILK INCOME AND MARKETING REPORT
24 Intensive Grazing Farms, 2001

	Pounds	Percent	Price/Pound	Total	$/Cwt of Milk
BASE FARM PRICE					
Butterfat	59,490.04	3.79%	$ 1.8584	$ 110,842.54	$ 7.03
Protein	48,806.38	3.11%	$ 1.9803	$ 97,381.04	$ 6.16
Solids	88,402.29	5.61%	$ 0.1379	$ 12,149.42	$ 0.77
Total Component Contribution					$13.96
PPD	1,577,147.42		$ 1.7535	$ 27,762.63	$ 1.75
Base Farm Price					$ 15.71
Premiums					
Quality				$ 1,945.75	$ 0.14
Volume				$ 1,773.50	$ 0.11
Market Premiums				$ 5,438.88	$ 0.26
Total Premiums					$ 0.51
BASE FARM PRICE + PREMIUM					$ 16.22
Deductions					
Promo				$ 2,211.75	$ 0.15
Hauling + Stop Charges.				$ 8,538.71	$ 0.55
Market Fees & Coop Dues				$ 949.13	$ 0.05
Futures/Contract Fees				$ 0.00	$ 0.00
Total Deductions					$ 0.75
BASE FARM PRICE + PREMIUMS - DEDUCTIONS					$ 15.47
Marketing Programs					
Compact				$ 421.04	$ 0.02
Futures Contracts, Forward Contracting, Etc.				$ 34.00	$ 0.00
Total Marketing Income					$ 0.02
Patronage Dividends				$ 1,652.96	$ 0.09
NET PRICE RECEIVED ON FARM, ALL SOURCES					**$ 15.58**
PPD - Hauling, per cwt.					$ 1.20
PPD - Hauling + Market Premiums, per cwt.					$ 1.46

[34] 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[35, 36]
(Each Category Sorted Independently)
24 New York Dairy Farms, 2001

	Lowest Quintile	←		→	Highest Quintile
Butterfat, %	3.41	3.63	3.73	3.91	4.39
Protein, %	2.87	3.04	3.10	3.15	3.49
Other Solids, %	5.28	5.63	5.69	5.71	5.77
Butterfat, $ per Cwt.	6.40	6.64	6.85	7.40	8.07
Protein, $ per Cwt.	5.65	5.89	6.12	6.34	6.93
Other solids, $ per Cwt.	0.72	0.75	0.78	0.80	0.83
Total Component Value per Cwt.	**$13.01**	**$13.28**	**$13.69**	**$ 14.40**	**$ 15.79**
PPD, $ per Cwt.	1.35	1.56	1.72	1.86	2.42
Base Farm Price per Cwt.	**$ 14.62**	**$ 15.11**	**$ 15.61**	**$ 16.08**	**$ 17.50**
Quality, $ per Cwt.	.00	.07	.13	.20	.32
Volume, $ per Cwt.	.00	.01	.05	.16	.40
Market premium, $ per Cwt.	.00	.02	.19	.46	.74
Total Premium, $ per Cwt.	**.13**	**.34**	**.50**	**.73**	**.92**
Base Farm Price + Premiums per Cwt.	**$ 14.89**	**$ 15.60**	**$ 16.10**	**$ 16.79**	**$ 18.11**
Promotion, $ per Cwt.	.10	.15	.15	.15	.19
Hauling, $ per Cwt.	.15	.46	.60	.68	.97
Market fees & coop dues per Cwt.	.00	.01	.05	.08	.15
Futures/contract fees, $ per Cwt.	.00	.00	.00	.00	.00
Total Marketing Expenses per Cwt.	**$ .37**	**$ .67**	**$ .78**	**$ .87**	**$ 1.18**
Base + Premiums – Deductions per Cwt.	**$ 14.19**	**$ 14.79**	**$ 15.21**	**$ 16.08**	**$ 17.47**
Compact, $ per Cwt.	.00	.00	.00	.00	.12
Futures contract, forward contracting, $ per Cwt.	.00	.00	.00	.00	.01
Total Marketing Income, $ per Cwt.	**$ .00**	**$ .00**	**$ .00**	**$ .00**	**$ .13**
Patronage Dividends, $ per Cwt.	**$ .00**	**$ .00**	**$ .01**	**$ .03**	**$ .48**
Net Price Received From All Sources, $ per Cwt.	**$ 14.39**	**$ 14.99**	**$ 15.28**	**$ 16.10**	**$ 17.50**
PPD - hauling, $ per Cwt.	**0.76**	**0.98**	**1.18**	**1.36**	**1.84**
PPD - hauling + mkt premiums, $ per Cwt.	**0.95**	**1.22**	**1.47**	**1.65**	**2.15**

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

[36]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 $2,000 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 $2,000 per month plus the value of operator(s) labor at $2,000 per month plus total hired labor expense divided by the number of cwt. produced.

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

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

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OTHER A.E.M. EXTENSION BULLETINS

EB No	Title	Fee (if applicable)	Author(s)
2002-11	DFBS: Northern Hudson Region 2001	($10.00)	Conneman, G., L. D. Putnam, C. S. Wickswat, S. Buxton, and J. Karszes
2002-10	Farm Labor Regulations	($8.00)	Grossman, D. and J. D. Minard
2002-09	DFBS: Western and Central Plain Region 2001	($10.00)	Knoblauch, W. A., L. D. Putnam, J. Karszes, S. Richards, J. Hanchar, J. Barry, K. English, T. Terry, and G. Allhusen
2002-08	New York Large Herd Farms, 300 Cows or Larger 2001	($15.00)	Karszes, J., W. A. Knoblauch, and L. D. Putnam
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