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DAIRY FARM BUSINESS SUMMARY

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INTENSIVE GRAZING FARMS NEW YORK 2011



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2011 DAIRY FARM BUSINESS SUMMARY
Intensive Grazing Farms
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2011 DAIRY FARM BUSINESS SUMMARY INTENSIVE GRAZING FARMS

INTRODUCTION

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

The farms included in the study are a subset of New York State farms participating in the Dairy Farm Business Summary and Analysis Program (DFBS). Twenty-eight New York 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 percent of the forage consumed during the growing season was from grazing. Operators of these 28 farms were asked to complete a grazing practices survey. Twenty-one of the farms did complete it. **The study centered on 28 New York farms which were not organic farms and were not first year grazers. Throughout the study, the grazing dairies are compared to the “Non-Grazers”, which are 58 farms with similar herd size to the 28 grazing farms.**

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 (DFBS) Project in 2010 and 2011. A ten-year comparison is also included this year. 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 11. The third section, Case Studies, describes two grazing farms. The fourth section summarizes grazing farms by herd size.

The summary and analysis portion of this report follows the same general format as in the 2011 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. Non-DFBS participants can download a DFBS Data Check-In Form at <http://dfbs.cornell.edu>. After collecting data on the form, it can be entered in the U.S. Top Dairies business summary program at the same website to obtain a summary of their business.

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 can be helpful in analyzing performance¹ 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 24 farms that were grazing in both 2010 and 2011 and participated in the Dairy Farm Business Summary (DFBS) Project for both years.

The major factor impacting farm profitability in 2011 was the increase in the price of milk. The net milk price was \$17.25 per hundredweight in 2010 and \$20.99 in 2011, a 21.7 percent increase. This gave grazers an opportunity to pay down operating debt, to catch up with inputs that were deferred, or to invest in the farm.

These 24 farms remained the same herd size at 147 cows for both years, but the number of heifers increased from 108 to 115. The total pounds of milk sold per farm decreased 3.7 percent as milk sold per cow decreased 3.6 percent, from 15,208 to 14,666 in 2011.

Worker equivalents remained essentially unchanged. Only a 3.3 percent increase but with cow numbers the same there was a decrease from 48 to 47 cows per worker. Coupled with the decrease in production per cow the milk sold per worker decreased from 737,210 to 687,011 or -6.8 percent. Labor costs per worker increased 22.9 percent from \$26,974 to \$33,158 and machinery and equipment costs per cow increased 6.3 percent. Grain and concentrate costs increased on both a percentage basis, 12 percent, and a cost per hundredweight basis, 35.2 percent. Total farm operating costs per cwt. sold increased 17.6 percent, from \$16.12 to \$18.95.

Much of the state had excessive rain in the spring of 2011 which impacted corn planting and hay crop harvest. The summer months were dry and then the rains returned in the fall. The quality of the hay crop was down on many farms and corn silage yields decreased due to late planting or fields that were too wet to harvest. The lower quality forage and higher price concentrate were reasons why milk production per cow decreased.

The total amount of investment per cow increased 6.8 percent from \$8,483 to \$9,064. Debt per cow in 2010 was \$2,036 and \$2,236 in 2011, a \$200 increase. Farm net worth increased from \$978,337 to \$1,061,335, up 8.5 percent.

On a per cow basis, milk sales increased \$448 per cow while total operating expenses only increased \$316 per cow. This resulted in an increase in profitability from a net farm income per cow (without appreciation) in 2010 of \$648 to \$696 in 2011.

Profitability Measures

- Net farm income without appreciation increased from \$95,118 to \$102,056.
- Net farm income per cow without appreciation increased from \$648 to \$696.
- Net farm income with appreciation increased from \$122,541 to \$123,927.
- Labor and management income per operator/manager remained nearly the same, \$32,268 versus \$32,364.
- Rate of return on equity capital without appreciation decreased from 6.9 percent to 6.5 percent.
- Rate of return on all capital without appreciation decreased from 6.4 percent to 5.9 percent.

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 Cornell Cooperative Extension office and become involved in a financial management education program.**

PROGRESS OF THE FARM BUSINESS
Same 24 Grazing Dairy Farms, 2010 & 2011

Selected Factors	Average of 24 Farms		Percent Change
	2010	2011	
<u>Size of Business</u>			
Average number of cows	147	147	0.0
Average number of heifers	108	115	6.5
Milk sold, lbs.	2,233,746	2,150,344	-3.7
Worker equivalent	3.03	3.13	3.3
Total nontillable and tillable pasture & hay acres	325	335	3.1
Total nontillable pasture & tillable acres	378	393	4.0
<u>Rates of Production</u>			
Milk sold per cow, lbs.	15,208	14,666	-3.6
Hay DM per acre, tons	2.2	2.6	18.2
Corn silage per acre, tons	19.9	16.7	-16.1
Stocking rate	2.52	2.63	4.4
<u>Labor Efficiency & Costs</u>			
Cows per worker	48	47	-0.02
Milk sold per worker, lbs.	737,210	687,011	-6.8
Hired labor cost per cwt.	\$1.64	\$2.21	34.8
Hired labor cost per worker	\$26,974	\$33,158	22.9
Hired labor cost as % of milk sales	9.0%	10.1%	12.2
<u>Cost Control</u>			
Grain & concentrate purchased as % of milk sales	25%	28%	12.0
Grain & concentrate per cwt. milk	\$4.55	\$6.15	35.2
Dairy feed & crop expense per cwt. milk	\$6.44	\$8.40	30.4
Labor & machinery costs per cow	\$1,146	\$1,335	16.5
Total farm operating costs per cwt. sold	\$16.12	\$18.95	17.6
Interest costs per cwt. milk	\$0.66	\$0.59	-10.6
Milk marketing costs per cwt. milk sold	\$0.98	\$0.96	-2.0
Fertilizer and lime expense per cwt. milk sold	\$0.79	\$0.85	7.6
Operating cost of producing cwt. of milk	\$12.12	\$15.19	25.3
Total costs of producing cwt. of milk	\$18.63	\$22.27	19.5
<u>Capital Efficiency</u> (average for the year)			
Farm capital per cow	\$8,483	\$9,064	6.8
Machinery & equipment per cow	\$1,456	\$1,546	6.2
Asset turnover ratio	0.42	0.44	4.8
<u>Income Generation</u>			
Gross milk sales per cow	\$2,772	\$3,220	16.2
Gross milk sales per cwt.	\$18.23	\$21.96	20.5
Net milk sales per cwt.	\$17.25	\$20.99	21.7
Dairy cattle sales per cow	\$290	\$235	-19.0
Dairy calf sales per cow	\$60	\$51	-15.0
Government receipts per cwt.	\$0.26	\$0.34	30.8
<u>Profitability</u>			
Net farm income without appreciation	\$95,118	\$102,056	7.3
Net farm income per cow without appreciation	\$648	\$696	7.4
Net farm income with appreciation	\$122,541	\$123,927	1.1
Labor & mgt. income per operator/manager	\$32,268	\$32,364	0.3
Labor & mgt. income per oper./manager per cow	\$220	\$220	0.0
Rate of return on equity capital with apprec.	6.9%	6.5%	-5.8
Rate of return on all capital with appreciation	6.4%	5.9%	-7.8
<u>Financial Summary</u>			
Farm net worth, end year	\$978,337	\$1,061,335	8.5
Debt to asset ratio	0.23	0.22	-4.3
Farm debt per cow	\$2,036	\$2,236	9.8

TEN YEAR COMPARISON: SELECTED BUSINESS FACTORS
New York Intensive Grazing Dairy Farms, 2002 to 2011

Item	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Number of farms	30	27	30	42	42	36	31	27	27	28
<u>Cropping Program</u>										
Total tillable acres	243	270	267	264	254	273	317	333	299	313
Tillable acres rented	125	126	96	110	145	132	159	146	121	130
Hay crop acres	119	149	133	143	145	162	176	186	187	189
Corn silage acres	22	28	38	34	41	39	47	51	29	40
Hay crop, tons DM/acre	2.2	3.7	2.9	1.9	2.2	2.0	2.3	2.2	2.2	2.6
Corn silage, tons/acre	12.4	15.3	15.3	14.9	15.5	17.6	16.9	15.6	19.7	16.9
Fertilizer & lime exp./tillable acre	\$30	\$21	\$31	\$31	\$29	\$45	\$52	\$41	\$55	\$45
Machinery cost/cow	\$439	\$447	\$598	\$586	\$590	\$688	\$739	\$567	\$590	\$668
<u>Dairy Analysis</u>										
Number of cows	94	100	104	95	101	110	127	144	134	137
Number of heifers	68	72	74	76	83	87	97	118	100	109
Milk sold, cwt.	15,687	15,637	17,744	15,868	17,168	18,243	21,111	22,862	20,483	20,680
Milk sold/cow, lbs.	16,618	15,684	17,144	16,783	17,054	16,627	16,593	15,884	15,231	15,087
Purchased dairy feed/cwt. milk	\$4.21	\$4.45	\$4.76	\$4.48	\$4.41	\$5.46	\$6.77	\$5.52	\$5.68	\$7.14
Purchased grain & concentrate as % of milk receipts	28%	29%	25%	26%	30%	23%	31%	35%	30%	30%
Purchased feed & crop exp/cwt.milk	\$4.99	\$5.06	\$5.55	\$5.34	\$5.30	\$6.59	\$8.14	\$6.66	\$6.82	\$8.45
Operating cost producing milk/cwt.	\$9.76	\$9.53	\$11.83	\$11.35	\$10.58	\$13.56	\$14.84	\$12.39	\$12.73	\$15.23
Average milk price per cwt.	\$12.94	\$13.73	\$17.27	\$16.41	\$14.09	\$21.21	\$19.99	\$14.04	\$18.43	\$21.90
Veterinary & medicine exp./cow	\$57	\$59	\$74	\$67	\$83	\$85	\$88	\$64	\$59	\$73
<u>Capital Efficiency</u>										
Farm capital/cow	\$5,870	\$6,286	\$7,300	\$7,526	\$7,667	\$8,158	\$8,244	\$8,314	\$8,316	\$9,064
Real estate/cow	\$2,389	\$2,738	\$3,475	\$3,369	\$3,249	\$3,445	\$3,382	\$3,723	\$3,988	\$4,250
Machinery investment/cow	\$1,109	\$1,191	\$1,287	\$1,337	\$1,289	\$1,474	\$1,504	\$1,418	\$1,436	\$1,567
Asset turnover ratio	0.46	0.46	0.50	0.48	0.42	0.54	0.48	0.34	0.43	0.44
<u>Labor Efficiency</u>										
Worker equivalent	2.59	2.71	2.90	2.70	2.80	2.70	2.91	3.22	2.97	2.95
Operator/manager equivalent	1.24	1.36	1.50	1.32	1.39	1.28	1.35	1.49	1.29	1.30
Milk sold/worker, lbs.	605,677	577,020	611,862	587,165	614,066	675,657	726,309	709,259	689,664	701,602
Cows/worker	36	37	36	35	36	41	44	45	45	47
Labor cost/cow	\$683	\$681	\$732	\$746	\$744	\$705	\$711	\$674	\$616	\$683
Hired labor exp./hired worker equiv.	\$24,009	\$22,912	\$25,966	\$25,645	\$26,504	\$28,417	\$32,729	\$30,266	\$26,493	\$33,260
<u>Profitability & Financial Analysis</u>										
Labor & mgmt. income/operator	\$2,482	\$9,638	\$22,397	\$17,801	\$1,606	\$54,684	\$19,786	\$-34,934	\$22,765	\$30,582
Labor & mgmt income/operator/cow	\$26	\$96	\$215	\$187	\$16	\$498	\$156	\$-243	\$170	\$223
Net farm income/cow w/o apprec.	\$322	\$449	\$652	\$572	\$383	\$1,019	\$568	\$-6	\$574	\$698
Farm net worth, end year	\$369,123	\$454,465	\$578,704	\$535,182	\$584,266	\$706,999	\$765,083	\$830,593	\$841,683	\$984,576
Percent equity	66%	69%	73%	72%	74%	73%	71%	70%	73%	77%

MYTHS OF GRAZING

Since 1996 Cornell's Agricultural Economics and Management has collected Dairy Farm Business Summary information from grazing dairies. Professor George Conneman has participated with the project since that time. Over the years he has suggested to dairy farmers the possibility of converting their farm to a grazing farm. The responses he has received were sometimes legitimate and some were, as he called them, "The Myths of Grazing". Below are the list of myths and their appropriate responses.

MYTHS OF GRAZING	TRUTHS OF GRAZING
A high level of milk production per cow <u>is not</u> important for success of a Management Intensive Grazing (MIG) dairy.	True and False--As with confinement herds, production per cow is important, but more important for grazing herd's success is lowering the cost of production per hundredweight.
Grazing is the last thing a dairy farmer does before calling the auctioneer.	It is true that many grazing dairy farmers arrived at grazing through economic hard times, but this is due more to the inability of farmers to change without feeling economic pain. Many have found success once they decided to change.
A lower set of skills is required to make intensive grazing work.	Grazing dairies have all the same management issues that confinement herds have with the addition of keeping adequate amounts of pastures through seasons that vary. Management areas such as crop production, herd health, and labor are less stressful due to the adoption of grazing.
MIG is impractical for herds of greater than 100 cows.	There are many 300+ cow grazing herds, with the maximum in New York around 600 cows. The limiting factor is usually the amount of pasture needed close to the milking area since the cows need to walk for milking twice a day.
Machinery and feed costs are significantly lower on MIG farms.	The grazing season in New York is only 4-5 months long; this requires the farm to produce the same as a confinement herd the rest of the year. The machinery is doing less acreage per year which will reduce repairs and replacement costs. Substituting pasture for haylage in the cow's diet is beneficial due to the nutrient density of pasture.
Putting the cows out to pasture means that the farmer will spend more time chasing escaped cows and fixing fence.	Over the past 20 years new fencing technologies (mostly from New Zealand) have removed this fear. Many Soil and Water Districts have offered grants to pay for installing these systems.
It only takes grazing skills to make MIG work on dairies.	As stated earlier, a grazing dairy farmer has the same areas of management to deal with. Their grazing ability is important to make the system work but bottom line is they still operate as a confinement dairy 6-7 months a year.

INTENSIVE GRAZING SURVEY SUMMARY

From the survey data of the 21 selected grazing farms that completed the grazing practices survey, analysis of average production levels and profitability measures are shown below. Labor and management income per operator per cow without appreciation was used to evaluate whether certain practices contributed favorably to improved profitability. Labor and management income per operator per cow is a measure of the net annual return after the operators' unpaid family labor and an equity charge for capital used in the business has been applied. This is one of the ways to compare diverse businesses that have high debt to those with no debt and those that may rely heavily on unpaid labor with those that have all paid labor. The farms were divided into two groups comprised of the top 50 percent and the lower 50 percent scaled from the highest to lowest labor and management income per operator per cow.

SELECTED PRODUCTION AND PROFITABILITY MEASURES

Intensive Grazing Dairy Farms, 2011

	Average (21 farms)	Average of the Top 50% (10 farms)	Average of the Lower 50% (11 farms)
Labor and management income per operator per cow	\$189	\$390	\$9
Average number of cows	155	178	134
Milk sold per cow, pounds	13,744	13,602	13,915
Operating cost of producing milk per cwt.	\$15.62	\$15.09	\$16.26
Total cost of producing milk per cwt.	\$23.17	\$21.60	\$25.03

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, 2011

	Number of Farms Responding	Average of All Farms Answering Question	Average of the Top 50%	Average of the Lower 50%
<u>Experience</u>				
Average years of farming experience	20	29	28	31
Average years of grazing experience	21	14	12	16
<u>Farm Characteristics</u>				
Stopped milking cows, number of days	3	61 days	60 days	61 days
Percent of farms with a parlor milking system	21	57%	50%	64%
<u>Pasture in the Ration</u>				
Average percent forage from pasture	17	68%	64%	71%
Average length (days) of grazing season	21	138 days	140 days	136 days
Average pounds of grain fed while grazing	11	11.2	10.4	11.6
Average pounds of grain fed in winter	12	14.8	14.9	14.8
Average pounds of forage dry matter fed while grazing	16	9.8	11.3	8.7
Average pounds of forage dry matter from grazing	16	21.8	18.7	24.2
Average pounds of forage dry matter fed in winter	17	29.3	27.4	30.6
<u>Pasture Management</u>				
Percent rotated after each milking	21	33%	40%	27%
Percent rotated daily	21	48%	30%	64%
Percent rotated every third day	21	10%	20%	0%
Percent other rotation	21	10%	10%	9%
Percent applied commercial fertilizer to pasture	20	45%	56%	36%
Percent applied manure to pasture	19	63%	88%	45%
Percent applied lime to pasture	21	19%	20%	18%
Percent that clipped pasture	21	86%	90%	82%
Percent with a weed problem	20	55%	56%	55%
Percent with water in every paddock	21	67%	80%	55%
Percent with pasture re-seeded in past 10 years	13	26%	34%	21%
Percent that mechanically harvested pastures	13	28%	27%	29%
Most common pasture species				
First		Orchardgrass	Tall Fescue	Orchardgrass
Second		Bluegrass	Orchardgrass	Bluegrass
Third		Tall Fescue or Native White Clover	Ryegrass	Native White Clover

Practices to increase pasture quality tended to indicate higher profitability. Those practices included use of commercial fertilizer or manure and re-seeding pasture.

Breeds

Holstein was the most common breed with nine of the farms having 90 percent or greater Holstein animals. The second most common were Crossbreeds which were on eight farms. Farms with Holstein animals tended to have higher milk production but this year had lower profitability both per cow and per hundredweight.

FARMS SCALED BY BREED OF HERD

Intensive Grazing Farms, 2011

	Number	Pounds Milk Sold Per Cow	Labor & Mgmt. Income per Operator Per Cow	Labor & Mgmt. Income per Operator Per Cwt.	Cull Rate (Sold for Beef or Died)
Farms that are 90+% Holstein	9	17,434	\$183	\$1.05	25%
Farms that are less than 90% Holstein	12	12,641	\$195	\$1.54	25%

Supplemental Feeding

Seventeen farms gave detailed ration data and the table below compares the six farms that fed corn silage to the eleven that did not. Farms that incorporated corn silage into their grazing forages have higher milk production per cow. These farms do not always have higher profitability. In past years, the feeding of corn silage has shown to be profitable some years and unprofitable others, while supplementation of pasture in general has always shown to be a profitable practice. For a more specific look at what was being fed to these grazing herds, see the following section "Grazing Season Ration Details".

SUPPLEMENTAL FEEDING

Intensive Grazing Farms, 2011

	Top 50% (7 farms)		Lower 50% (10 farms)	
	Corn Silage (3)	No Corn Silage (4)	Corn Silage (3)	No Corn Silage (7)
Labor & management income per oper. per cow	\$812	\$315	\$78	\$-167
Milk sold per cow, pounds	17,780	12,813	13,739	12,014
Grain fed in summer, pounds dry matter	10.2	2.7	6.6	8.8
Corn silage fed in summer, pounds dry matter	7.5	---	7.4	---
Other forage fed in summer, pounds dry matter	5.8	6.4	4.1	8.1
Percent forage from pasture	51%	74%	63%	75%

Grazing Season Ration Details

Four farms in the top 50 percent of profitability fed an average of 10.4 pounds dry matter of grain during the grazing season. Three farms fed corn silage at an average of 7.5 pounds dry matter.

Seven farms in the lower 50 percent of profitability fed an average of 11.6 pounds dry matter of grain during the grazing season. Three of the farms fed corn silage at an average of 7.4 pounds dry matter.

Frequency of Rotation

Seven of the farms rotated their pastures for milk cows after each milking, ten of the farms rotated pasture every day, and two farms rotated pasture every third day. The table below compares the rotation frequency to milk production and labor and management income per operator per cow.

ROTATION FREQUENCY
Intensive Grazing Farms, 2011

	Top 50% (10 farms)		Lower 50% (11 farms)	
	Rotate At Least Once Per Day (7)	Other Rotation Schedule (3)	Rotate At Least Once Per Day (10)	Other Rotation Schedule (1)
Milk sold per cow, pounds	13,044	17,780	14,151	Too Few
Labor and management income per operator per cow	\$330	\$812	\$24	To Report

Water Source

Ten farms provided the majority of water from a well while the remaining eleven provided water from a natural source (pond-3, stream-2, and spring-6).

WATER SOURCE
Intensive Grazing Farms, 2011

	Top 50% (10 farms)		Lower 50% (11 farms)	
	Well (5)	Other (5)	Well (5)	Other (6)
Milk sold per cow, pounds	12,544	19,184	10,658	18,,570
Labor and management income per operator per cow	\$332	\$686	\$37	-\$44

Milking System

Farms utilizing some sort of a parlor (herringbone, parallel, rotary, flat barn or other) were separated from those utilizing a pipeline. The type of milking system may impact the degree of control the manager has over the supplemental feeding system and the capital investment level of the farm. In total there were 10 pit parlor systems (no flat parlors; 2 other parlors) and the remaining 9 farms used pipeline systems.

MILKING SYSTEM
Intensive Grazing Farms, 2011

	Top 50% (10 farms)		Lower 50% (11 farms)	
	Pipeline (5)	Parlor (5)	Pipeline (4)	Parlor (7)
Milk sold per cow, pounds	20,249	12,603	14,547	13,820
Labor and management income per operator per cow	\$740	\$304	-\$657	\$69
Average number of cows	47	310	48	183

Commercial Fertilizer

Nine farms applied fertilizer to the paddocks during the growing season. The majority of farms applied urea and others applied a blended fertilizer. It is not possible to compare pasture yields in the different systems because quantities were not measured from farms that mechanically harvested hay from pasture.

COMMERCIAL FERTILIZER
Intensive Grazing Farms, 2011

	Top 50% (10 farms)		Lower 50% (11 farms)	
	Applied Fertilizer (5)	Did Not Apply Fertilizer (5)	Applied Fertilizer (4)	Did Not Apply Fertilizer (7)
Milk sold per cow, pounds	13,396	13,843	13,411	14,531
Labor and management income per operator per cow	\$357	\$428	\$76	-\$89
Stocking rate, cows per acre	2.5	1.9	2.5	3.6
Percent forage from pasture	56%	51%	61%	71%
Most common product applied		Urea		Ammonium Sulfate or Urea

Intensive Grazing Satisfaction Comments

On a scale of 1 to 5, with 5 being the highest, 20 farms responded with the average rating of grazing satisfaction of 4.5 with 12 farms responding 5 (very satisfied), 6 responding 4 (satisfied), and 2 responding 3 (somewhat satisfied). When asked whether their lifestyle has improved with the adoption of rotational grazing, 19 farms responded with "yes".

Grazing Trends

The table below compares key figures from 1996 (the first year of the intensive grazing summary), 2011, and a 15-year average (not the same farms all 15 years). Cow numbers have increased but milk sold per cow has decreased slightly in recent years due to participation of farms with mixed breeds.² Operating cost of producing milk per hundredweight in 2011 averaged \$1.27 above the 15-year average as well as \$1.44 above 1996. Net farm income per cow without appreciation was \$88 higher in 2011 than the 15-year average.

2011 GRAZING INFORMATION COMPARED TO 1996 AND 1996 – 2011 AVERAGE
Intensive Grazing Farms, 1996 – 2011

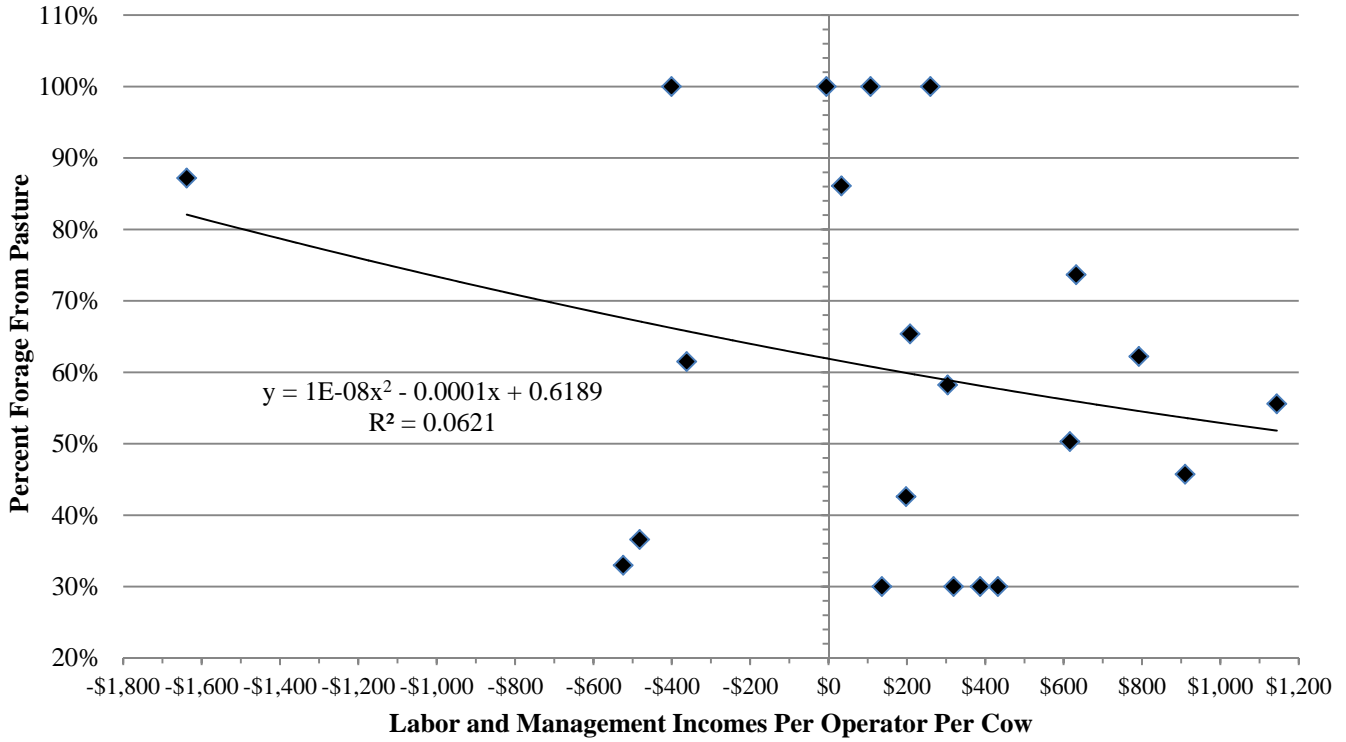
	59 Grazing Dairy Farms, 1996 Average	28 Grazing Dairy Farms, 2011 Average	Grazing Dairy Farms, 1996 – 2011 Average
Number of cows	78	137	103
Milk sold per cow, pounds ²	17,270	15,087	16,666
Operating cost of producing milk per cwt.	\$11.29	\$15.23	\$11.69
Net farm income per cow without apprec.	\$409	\$698	\$499
Grain and concentrate as % of milk receipts	30%	30%	28%
Grain and concentrate expense per cwt. milk	\$4.41	\$6.19	\$4.33
Price of milk per cwt.	\$14.78	\$21.90	\$16.17

² In 1996, similar size non-grazers sold 17,547 pounds of milk per cow and in 2011 similar size non-grazers sold 22,408 pounds per cow.

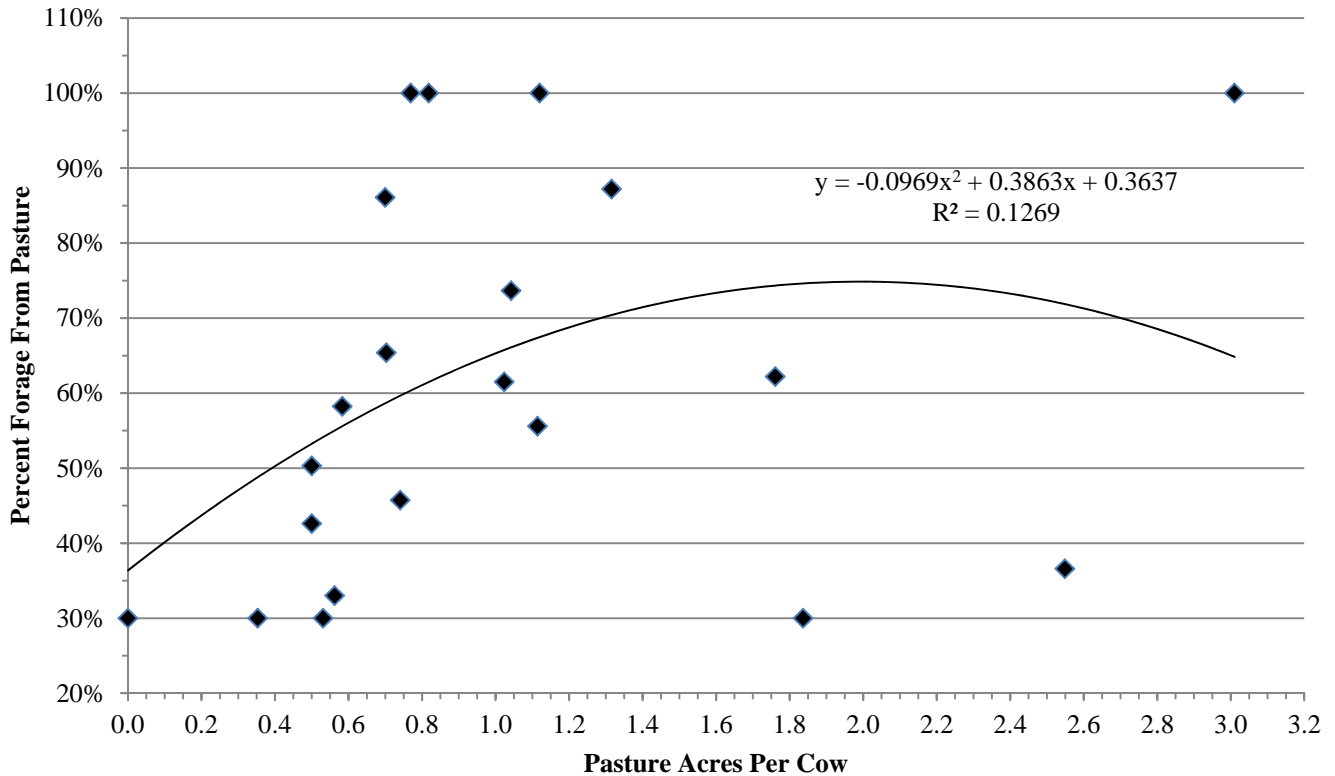
Percent Forage from Pasture

The following graphs compare the percent forage from pasture to labor and management incomes per operator per cow and pasture acres per cow.

PERCENT FORAGE FROM PASTURE VERSUS LABOR AND MANAGEMENT INCOMES PER OPERATOR PER COW
Intensive Grazing Farms, 2011



PASTURE ACRES PER COW VERSUS PERCENT FORAGE FROM PASTURE
Intensive Grazing Farms, 2011



INTENSIVE GRAZING FARMS VS. NON-GRAZING FARMS
New York State Dairy Farms, 2011

Item	All Intensive Grazing Farms ³	Non-Grazing Farms ⁴
Number of farms	28	58
<u>Business Size & Production</u>		
Number of cows	137	136
Number of heifers	109	114
Milk sold, pounds	2,067,971	3,044,291
Milk sold per cow, pounds	15,087	22,408
Milk plant test, % butterfat ⁵	4.1%	3.8%
Cull rate	26%	34%
Tillable acres, total	313	331
Hay crop, tons DM per acre	2.6	2.8
Corn silage, tons per acre	16.9	15.7
Forage dry matter per cow, tons ⁶	6.1	8.2
<u>Labor & Capital Efficiency</u>		
Worker equivalent	2.95	3.96
Milk sold per worker, pounds	701,602	769,732
Cows per worker	47	34
Farm capital per worker	\$421,175	\$361,327
Farm capital per cow	\$9,064	\$10,505
Farm capital per cwt. milk	\$60	\$47
Machinery and equipment per cow	\$1,567	\$2,096
<u>Milk Production Costs & Returns</u>		
Selected costs per cwt.:		
Hired labor	\$2.04	\$2.01
Grain & concentrate	\$6.19	\$6.33
Purchased roughage	\$0.95	\$0.53
Replacements purchased	\$0.07	\$0.28
Veterinary & medicine	\$0.49	\$0.60
Milk marketing	\$0.97	\$0.91
Other dairy expenses	\$1.29	\$1.66
Operating cost of producing milk per cwt.	\$15.23	\$16.12
Total labor cost per cwt. (hired, family & operator)	\$4.52	\$4.02
Owner and operator resources per cwt.	\$4.61	\$3.56
Total cost of producing milk per cwt.	\$22.29	\$21.40
Average farm price per cwt.	\$21.90	\$21.45
<u>Related Cost Factors</u>		
Hired labor/cow	\$308	\$450
Total labor/cow	\$683	\$900
Purchased dairy feed/cow	\$1,078	\$1,537
Purchased grain & concentrate as % of milk receipts	30%	29%
Veterinary & medicine/cow	\$73	\$135
Machinery costs/cow	\$668	\$879
Feed & crop expenses/cwt.	\$8.45	\$8.07
<u>Profitability Analysis</u>		
Net farm income (with appreciation)	\$116,539	\$146,864
Net farm income (without appreciation)	\$95,645	\$119,554
Net farm income per cow (without appreciation)	\$698	\$880
Net farm income per cwt. (without appreciation)	\$4.63	\$3.93
Labor & management income per operator	\$30,582	\$40,191
Labor & management income per operator per cow	\$223	\$296
Rates of return on:		
Equity capital with appreciation	6.4%	7.9%
All capital with appreciation	5.8%	6.8%

³Farms grazing at least three months of year, changing paddock at least every three days, forage from pasture at least 30 percent, and no organic farms.

⁴Farms with similar herd size as the 28 rotational grazing farms.

⁵Average of farms reporting this data.

⁶Average of farms that grow forages.

CASE STUDIES

Howard and Mary Jo Straub Farm, Grazing and Robotic Milking

(Portions of this case study are taken from “Graze” Magazine, June-July 2012 issue. Thanks to the author, Joel McNair, for allowing us to use his article as a basis for this case study.)

The farm is located in St. Johns, Michigan. They have operated the farm for 38 years. Their grazing operation had been successful, but were thinking about retirement and providing a career opportunity for a younger generation.

Howard’s experience with local hired labor had been a mixed-bag. Hispanic labor could do the job but the Straub’s don’t speak Spanish.

But a new parlor including a new building isn’t cheap anymore. Indeed, Howard was surprised when he started comparing the price of the parlor and accompanying facility with the total cost of installing everything needed to let a robot do the job. “Apples to apples, they were the same price,” he relates.

The Straubs swallowed hard and borrowed the \$198,000 to purchase and install a Lely Astronaut A3 robotic milker that went into operation in January 2010. They also paid \$125,000 cash to build a freestall barn sized for 120 cows. The Straubs dubbed their new worker “Freedom.”

Much has been written, said and rumored in the dozen years that robots have milked U.S. cows. When linked to activity tags on the cows, the machine’s computer provides huge volumes of information about cows, the milk they’re producing and the robot’s operating functions. Howard notes his unit is capable of spewing forth 52 different reports ranging from electrical conductivity (roughly cell counts) to heat status. (As an example from a grazing perspective, robots at the Kellogg Biological Station near Kalamazoo, MI, are reading cow tags to measure bite rates on pasture.)

There have been a few stories over the years, too, including tales of dairy farmers sleeping in milk houses because their machines were constantly malfunctioning and sending distress messages to their owners’ cell phones. The Straubs say they haven’t dealt with such problems, as the bugs have been minimal and Lely’s service staff available when problems do arise. Howard says there was a lot of pushing and shoving involved early on in getting cows to enter the robot stall, and some heifers require a lot more training than others. They saw that convincing heifers to stand on the stall’s concrete slats tends to be more difficult than getting them to accept the actual robot.

One of the limits to robots is that each unit can milk only so many cows — 60 is the number often cited as the limit. With such a low ceiling, most robot owners push their cows for high production in order to get as much milk as possible through the machines.

That doesn’t sound very much like a grazing dairy, and especially the Straubs’ dairy: They milk smaller crossbred cows that produce lots of solids, but last year shipped only about 13,000 pounds of milk per cow. While Howard notes that margins are more important than volume, he and Mary Jo recognized that they would need to push more milk through the new system if it were to pay its way.

So they went beyond the stated limit, all the way up to 105 cows. This didn’t work. Cows weren’t getting milked often enough, and there was no margin for error if the machine went down for any length of time. The Straubs eventually had to split the herd, with the halves being switched from pasture to barn every few hours.

“We should have had two robots right away,” says Mary Jo. She and Howard went shopping, and in Iowa found a used Lely A3 that ended up costing just over \$90,000 when installed with relatively minor facilities modifications. Dubbed “Liberty,” the second unit has not been as popular with the herd since starting operations in February. Cows are creatures of habit, and with the second unit they are milked from the left rather than the right hand side as with the first one. The Straubs say acceptance of the new machine will take some time.

But they say that the milking has already improved, with peak producers coming in three to four times a day. They’re heading toward 140 cows, compared to the peak of 120 they milked in the old parlor. “I think that 75 cows per unit will be the limit for a grazing herd,” Howard forecasts.

Mary Jo says that only two cows were culled because they could not adapt to the robot; in both cases their teats were too low for the machine’s sensor to detect. They’ve made only minor modifications to the grazing system to date, with cows still walking three-quarters of a mile to and from the farthest paddocks. They always had access back to the barn, and they still remain under

farmstead shade during the hottest summer afternoons. Howard would have liked to put the robot in the middle of the 128 pasture acres, but the cost of doing so was prohibitive. Cows walk to the robot in the same small groups each time. Says Howard, “You don’t want to stand in front of a cow that wants to get milked. You’ll get run over.”

While the grain dispensed by the robot is a major reason for this urgency, the machine will provide only a pre-determined amount over a 24-hour period. The cow won’t be milked if a reading of her tag reveals that her expected output for the milking is not high enough to merit another session.

There remain some problems related to the grazing system. A few cows come to the barn and return to pasture without having been milked. So in May the Straubs installed a \$7,000 automated gate at the end of the barn that bars return to pasture if a cow is shown to be holding at least 70 percent of her expected daily milk yield. Mary Jo reports that the sorting gate is working as advertised, and notes that it should have been part of the original system.

However, some cows and heifers are still not coming up to the barn on their own and have to be retrieved from pasture. Mary Jo says part of the problem may be that cows became accustomed to being retrieved when the split herd was being employed. The problem may eventually solve itself as memories of the old methods fade, although the Straubs might also need to modify their lane system to improve cow flow. It is easier to monitor cow movements when there are an equal number of paddocks on each side of the main cow lane, which is not the case with the Straubs’ current set-up. They’re also going to move dry cow paddocks further from the buildings to provide more close-by grazing for the milking herd.

Grazing dairies in Lely’s home country, the Netherlands, employ robots. They’re becoming more common on U.S. confinement dairies: Howard says he’s heard that soon there will be 39 robots on Michigan farms, with one place having installed eight of them. But does this make any sense for U.S. graziers who must deal with paddock systems that can be quite complex, and who tend to focus on limiting capital expense?

“To me, it’s easier to justify a robot in a confinement system,” Howard acknowledges. “You’ve got the higher production, you already use the management software, and since you’re already headed in that direction, you might as well keep going.” He says he is unlikely to fully employ all of the information the robot and its computer can provide.

“I wouldn’t have done it if we’d had to put a mortgage on the farm,” he says, noting that nearly two decades of grazing is what got him into a financial position solid enough to take the plunge. “It’s the grass that bought me the robot.”

But robots can aid grazing operations, too. For instance, the heat detection function has proven to be of value, especially as the Straubs have moved away from spring-seasonal to year-round calving to keep the robots operating throughout.

Their employee, Dan, says the robots mean that less time is spent on milking-related chores, and more on keeping track of the cows. “With robots I’ve learned more about cows than in any other management system,” he adds.

Howard says milk production has suffered because of the problems that came with too many cows for one robot, lots of new heifers as the herd grows (all internally) and the fact that many stale cows have been getting milked as the herd is converted to year-round milking. “I think we can get above 15,000 pounds of milk pretty easily,” he forecasts. At about 170,000, somatic cell count is little changed from the parlor days, and Mary Jo says that there have been only two cases of mastitis (both in single quarters) since going to the robots. Cups are removed individually, and the robots do not over-milk cows. “The cows like it because they’re always milked the same,” she explains.

Robots and their ability to be deal with cows as individuals have also allowed the Straubs to be more strategic in their grain feeding. They’ve instructed the computer to drop up to 18 pounds of grain mix (not the recommended pellets) daily in increments of up to eight pounds to peak cows, with amounts dialed back as milk production declines to provide for a lactation feeding average near 10 pounds per day. That’s what the cows were offered throughout most of lactation in the old parlor.

Howard thinks he is saving at least \$20,000 in annual milking labor compared to a parlor. “Actually,” he offers, “what you’re doing with a robot is just buying your labor ahead of time.” He and Mary Jo also figure that they’re avoiding a lot of hired labor hassle ahead of time. Robots are said to have 20-year lifetimes, and Mary Jo says their resale value tends to be greater than that of conventional milking equipment.

The Straubs are members of Grassroots, a group of grazing dairies in Michigan, Indiana and Ohio that hold on-farm meetings and analyze their financial data using Cornell University’s Dairy Farm Business Summary. Howard says the farm ranked in the middle of the group for 2011 in such key measures as return on assets and return to labor and management despite the large equipment and facilities investments and subpar milk production.

Shultz Family Cheese, Lowville, New York

Have you ever heard the old saying “Go big or go home”? Usually it is referencing taking on a new challenge in someone’s life or a business adventure, implying that someone should take a leap of faith and see where it takes them. The dairy industry is no stranger to the phrase and over the past decade we have seen farms expand their operations in order to improve productivity and show a larger profit. With that being said, is increasing the herd size the only way a dairy can improve their productivity and profit? How about staying at the same number of cows and adding a new enterprise? Joe and Sue Shultz from Shultz Family Cheese in Lowville, New York, will tell you that expanding the herd to produce a larger quantity of milk was not what they were looking to do.

If you are familiar with Lewis County, you’ll understand the love for cheese curd this county has. Just stop in at Lowville Producers Coop and I guarantee you will walk away with the taste of fresh curd in your mouth. Understanding your market and knowing what consumers want are a few of the reasons Joe and Sue Shultz decided to take on a new adventure in their lives...taking their own milk and producing a product that was sure to sell within the region where they are located. Now, the credit for this decision should be given to Sue, she first began her thought process just last year after reading an article about processing milk to make cheese. She began to explore the different options out there and researched many concepts and ideas, making their first batch of cheese on the stove top. With the farm operating as an intensive grazing farm, both Joe and Sue were looking for something more to do with their farm, with the idea being to improve profitability. Originally they thought that bottling their own milk was where they wanted to go, but after spending some time exploring the cheese making business they decided to go that route instead.

With any new adventure that people take on, it is a good idea to do your homework and understand what exactly is involved with the process. Joe and Sue spent the winter of 2010-2011 exploring different cheese processing plants. Traveling throughout New York State and up into Canada, Sue and Joe visited different processing plants and gathered ideas and knowledge for their own business. So the process began, early spring 2011 the farm broke ground to add a cheese room off the already existing milk house and things started to move fast.

Let’s rewind a little and give some history of the farm, the property was originally bought by Joe’s parents back in 1973, Joe’s father who was originally a Delaware County Extension Agent bought the farm and began to milk registered Holsteins. Joe spent his youth on the farm, forming a love for agriculture that could never be broken. After completing his education at Morrisville State College and Cornell University, Joe began his career in Oswego County working for FSA, still involved with the agriculture industry. However, as many of you know the love and desire for agriculture that we grew up with is hard to beat and milking cows once again was calling Joe home to the farm. Joe returned home to the farm and rented the farm from his parents, where he continued the grazing program and kept the cattle numbers the same. In early 2000 Joe decided to add on to the originally barn to improve cow comfort and ventilization in the barn to improve productivity. The farm originally had 130 acres of land. Recently Joe bought 20 more acres to improve grazing ability and forage inventory.

With the help of many different organizations throughout New York, Joe and Sue set out on an adventure that they never thought was possible. Shultz Family Cheese was on its way, and there was no holding them back from having “Curds our whey”. With the help of FarmNet personnel and many individuals from NYS Agriculture & Markets a business plan began to develop. Equipment was being purchased as early as January of 2011 and the business was taking shape.

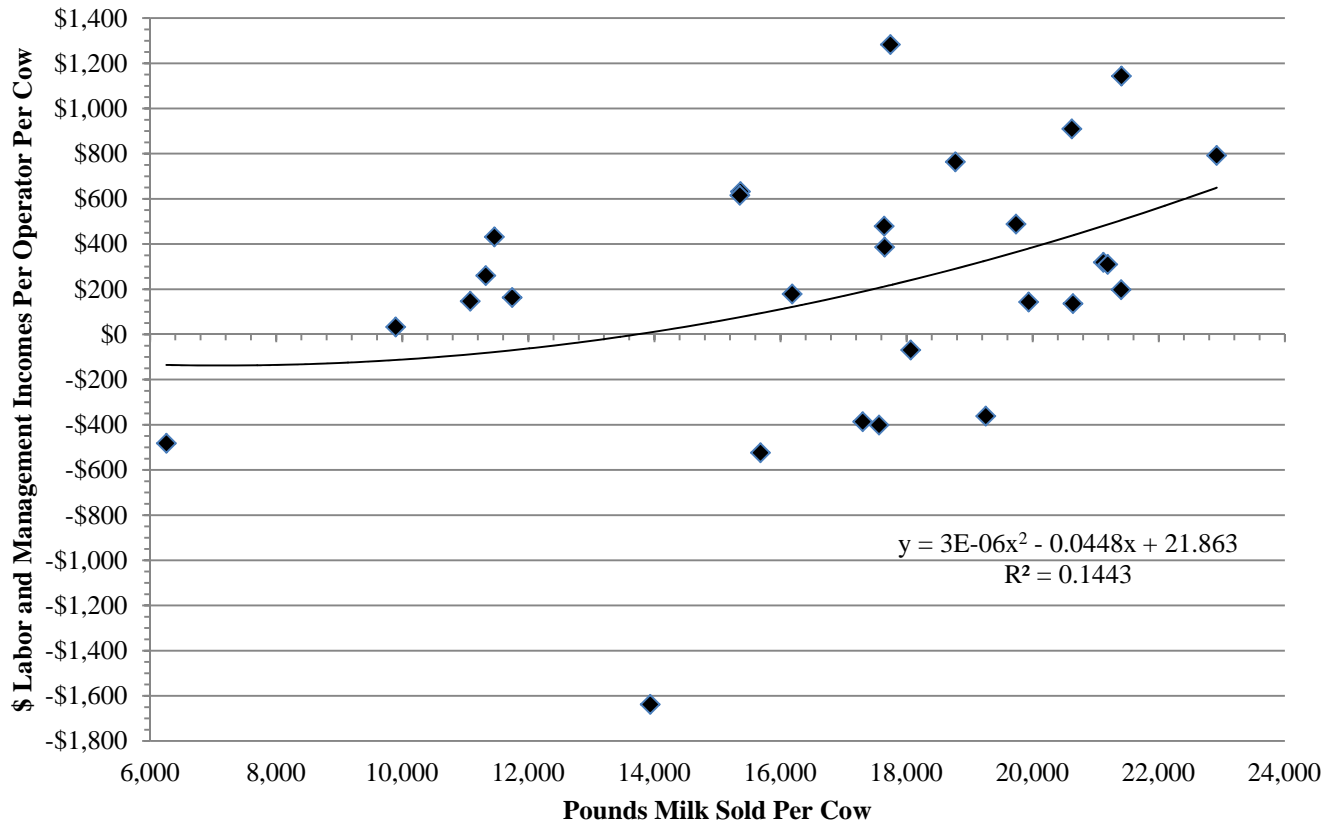
August 2011 was the first month of production for Shultz Family Cheese, and today they are producing Cheese Curd three times a week using a third of their total milk production. Originally they assumed they would be making cheese once or twice a week, but once the locals discovered their cheese curd, the demand has shot through the roof. While interviewing the Shultz’s, in a time frame of just an hour, eight different people pulled into the driveway to purchase some of their fresh curd. Shultz Family Cheese can be found on shelves throughout the county, at different country stores, farmers’ markets and recently a local apple cider mill took on the product, increasing demand and profitability for the product.

No matter what we choose to do as a business, our mission or goal is to make a profit. Joe and Sue Shultz are an amazing example of individuals putting their minds to work to improve the overall productivity and profit of their farm. Sure they could have stuck to their business the way it was, but like many others they wanted more. Shultz Family Cheese is an example of hard work, determination and having a plan. A plan that is sure to change as business progresses, but a plan that set them up for success.

SUMMARY OF GRAZING FARMS BY HERD SIZE

There were 12 New York grazing farms with more than 100 cows. Herd size does not guarantee profitability, however, as small farms that are able to produce higher levels of milk per cow also show higher levels of profitability. The chart below shows the variation in labor and management income per operator per cow by pounds of milk sold per cow. The table on the following page compares grazing farms by herd size group.

**LABOR AND MANAGEMENT INCOMES PER OPERATOR PER COW AND MILK PER COW
28 Intensive Grazing Farms, 2011**



INTENSIVE GRAZING FARMS BY HERD SIZE GROUP

28 Intensive Grazing Dairy Farms, 2011

Item	50 Cows Or Less	51 to 130 Cows	131 Cows Or More
Number of farms	9	10	9
<u>Business Size & Production</u>			
Number of cows	43	82	293
Number of heifers	33	69	230
Milk sold, lbs.	732,768	1,444,055	4,096,416
Milk sold/cow, lbs.	17,085	17,632	14,002
Milk plant test, % butterfat (ave. of farms reporting)	3.9%	3.9%	4.1%
Cull rate	31%	28%	25%
Tillable acres, total	134	255	555
Hay crop, tons DM/acre	1.7	2.4	3.1
Corn silage, tons/acre	12.3	17.3	17.2
Forage tons DM/cow (ave. of farms that grow forage)	5.7	7.4	5.6
<u>Labor & Capital Efficiency</u>			
Worker equivalent	1.73	2.18	5.02
Milk sold/worker, lbs.	422,751	663,171	816,833
Cows/worker	25	38	58
Farm capital/worker	\$292,615	\$404,365	\$474,056
Farm capital/cow	\$11,803	\$10,763	\$8,134
Farm capital/cwt. milk	\$69	\$61	\$58
<u>Milk Production Costs & Returns</u>			
Selected costs/cwt.:			
Hired labor	\$0.51	\$0.92	\$2.76
Grain & concentrate	6.68	6.25	6.08
Purchased roughage	0.42	1.39	0.88
Replacements purchased	0.43	0.05	0.00
Veterinary & medicine	0.54	0.51	0.47
Milk marketing	1.29	0.97	0.91
Other dairy expenses	1.78	1.43	1.12
Operating cost of producing milk/cwt.	14.50	14.22	15.75
Owner/operator resources/cwt.	7.52	4.97	3.95
Total labor cost/cwt.	6.77	4.46	4.15
Total cost of producing milk/cwt.	25.31	22.24	21.77
Average farm price/cwt.	21.40	21.34	22.21
<u>Related Cost Factors</u>			
Hired labor/cow	\$87	\$162	\$386
Total labor/cow	1,157	787	581
Purchased dairy feed/cow	1,213	1,347	974
Purchased grain & concentrate as % of milk receipts	33%	29%	27%
Veterinary & medicine/cow	\$92	\$91	\$65
Machinery costs/cow	\$912	\$957	\$542
Feed & crop expense/cwt.	\$7.93	\$8.82	\$8.40
<u>Profitability Analysis</u>			
Net farm income (without appreciation)	\$36,372	\$68,270	\$185,335
Net farm income/cow (without appreciation)	\$848	\$834	\$633
Net farm income/cwt. (without appreciation)	\$4.96	\$4.73	\$4.52
Labor & management income/operator	\$4,389	\$23,199	\$53,219
Labor & management income/operator/cow	\$102	\$283	\$182
Rates of return on:			
Equity capital with appreciation	1.7%	4.6%	8.2%
All capital with appreciation	2.0%	4.6%	7.2%

SUMMARY AND ANALYSIS OF THE FARM BUSINESS

Business Characteristics

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

BUSINESS CHARACTERISTICS 28 Intensive Grazing Dairy Farms, 2011

Type of Farm	Number	Milking System	Number
Dairy	28	Bucket & carry	0
Part-time dairy	0	Dumping station	1
Dairy cash-crop	0	Pipeline	12
		Herringbone-conventional exit	5
		Herringbone-rapid exit	1
		Parallel	4
		Parabone	3
		Rotary	0
		Other	2
Type of Ownership	Number	Production Records	Number
Owner	26	Testing Service	20
Renter	2	On-Farm System	5
		Other	1
		None	2
Type of Business	Number	Business Record System	Number
Sole Proprietorship	19	Account Book	7
Partnership	3	Accounting Service	2
Limited Liability Corporation	5	On-farm computer software	19
Subchapter S Corporation	0	Other	0
Subchapter C Corporation	1		
Type of Barn	Number	Breed	Percent
Stanchion or Tie-Stall	13	Holstein	70
Freestall	10	Jersey	8
Combination	5	Other	22
Milking Frequency	Number		
2 times per day	27		
3 times per day	0		
Other	1		

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 2011.

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

28 Intensive Grazing Dairy Farms, 2011

Expense Item	Cash Paid	-	Change in Inventory or Prepaid Expense	+	Change in Accounts Payable	=	Accrual Expenses
<u>Hired Labor</u>	\$ 41,239		\$ 0	<<	\$ 973		\$ 42,212
<u>Feed</u>							
Dairy grain & concentrate	136,800		6,762		-2,024		128,014
Dairy roughage	18,712		-1,699		-727		19,683
Nondairy	205		0		0		205
Professional nutritional services	0		0	<<	0		0
<u>Machinery</u>							
Machinery hire, rent & lease	12,393		89	<<	665		12,970
Machinery repairs & farm vehicle exp.	23,517		48		184		23,652
Fuel, oil & grease	17,772		175		21		17,618
<u>Livestock</u>							
Replacement livestock	1,346		0	<<	0		1,346
Breeding	4,566		-80		27		4,673
Veterinary & medicine	10,578		429		-84		10,066
Milk marketing	20,043		0	<<	-9		20,034
Bedding	3,867		285		544		4,125
Milking supplies	7,953		-48		630		8,630
Cattle lease & rent	1,374		0	<<	0		1,374
Custom boarding	7,107		5,179	<<	-714		1,214
bST expense	301		-18		0		319
Livestock professional fees	2,010		1	<<	64		2,073
Other livestock expense	3,909		4		14		3,919
<u>Crops</u>							
Fertilizer & lime	17,689		828		485		17,346
Seeds & plants	5,664		824		141		4,981
Spray, other crop expense	2,852		-50		369		3,271
Crop professional fees	1,552		75	<<	-26		1,451
<u>Real Estate</u>							
Land, building & fence repair	9,590		477		-127		8,985
Taxes	11,028		0	<<	178		11,206
Rent & lease	7,639		0	<<	0		7,639
<u>Other</u>							
Insurance	5,852		0	<<	3		5,856
Utilities (farm share)	10,171		0	<<	26		10,196
Interest paid	12,458		0	<<	-290		12,168
Other professional fees	1,266		0	<<	0		1,266
Miscellaneous	2,620		-77		-30		2,667
Total Operating	\$ 402,072		\$ 13,204		\$ 292		\$ 389,159
Expansion livestock	3,720		0	<<	0		3,720
Extraordinary expense	0		0	<<	0		0
Machinery depreciation							26,528
Building depreciation							15,898
TOTAL ACCRUAL EXPENSES							\$ 435,306

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 2011 but not paid for. A decrease is subtracted because it represents payment for resources used before 2011.

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

28 Intensive Grazing Dairy Farms, 2011

Receipt Item	Cash Receipts	+	Change in Inventory	+	Change in Accounts Receivable	=	Accrual Receipts
Milk sales	\$ 450,721				\$ 2,208		\$ 452,928
Dairy cattle	30,484		\$ 954		1,473		32,911
Dairy calves	3,110		3,829		0		6,938
Other livestock	13,945		-4,898		-2,484		6,562
Crops	1,295		14,433		-93		15,636
Government receipts	5,154		0		1,310		6,464
Custom machine work	498				293		791
Gas tax refund	677				0		677
Other	<u>8,001</u>				<u>43</u>		8,044
Less nonfarm noncash capital ⁸		(-)	<u>0</u>			(-)	<u>0</u>
Total Receipts	\$ 513,884		\$ 14,317		\$ 2,750		\$ 530,951

⁷Change in advanced government receipts.

⁸Gifts 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 2011 for the 2012 crop year in excess of funds earned for 2011. Likewise, a decrease is added to cash government receipts because it represents funds earned for 2011 but received in 2010.

Changes in accounts receivable are calculated by subtracting beginning year balances from end year balances. Payments in January for milk produced in December 2011 compared to January 2011 payments for milk produced in 2010 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 operators⁹ 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.

⁹Operators 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.

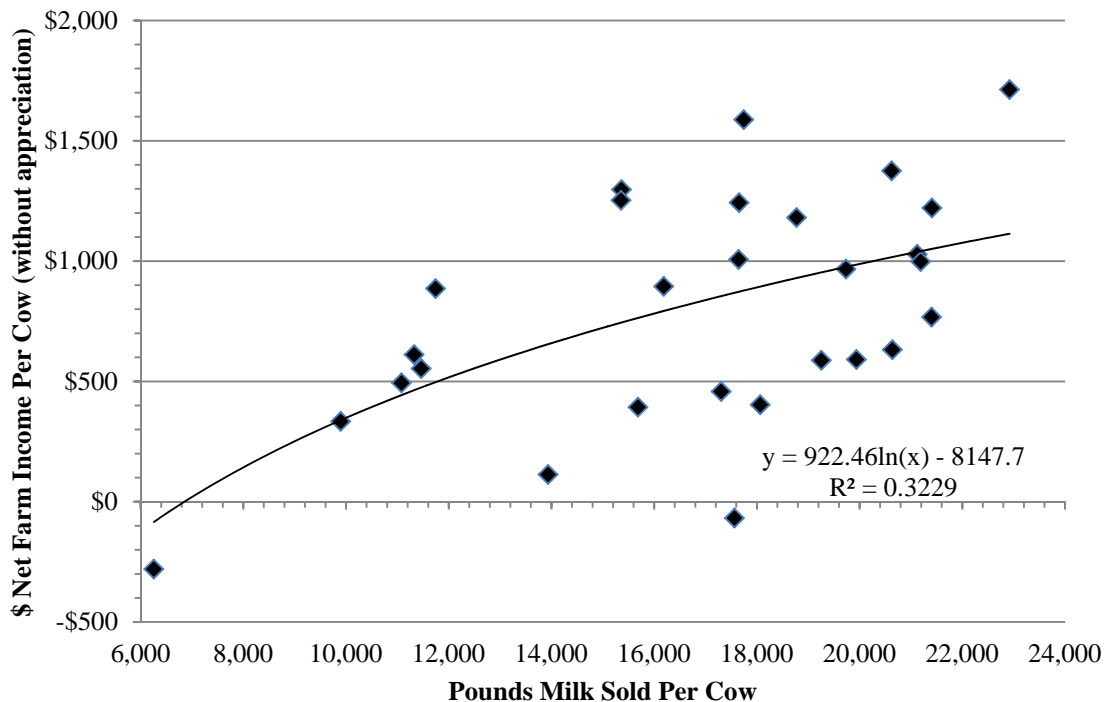
NET FARM INCOME
Intensive Grazing and Non-Grazing Dairy Farms, 2011

Item	28 Grazing Dairy Farms ¹⁰	Average Non-Grazing Farms ¹⁰
Total accrual receipts	\$ 530,951	\$ 725,448
Appreciation: Livestock	1,288	1,162
Machinery	7,412	5,738
Real Estate	11,099	21,697
Other Stock & Certificates	1,096	-1,287
Total Including Appreciation	\$ 551,845	\$ 752,757
Total accrual expenses	- 435,306	- 605,893
Net Farm Income (with appreciation)	\$ 116,539	\$ 146,864
Net Farm Income Per Cow (with appreciation)	\$ 850	\$ 1,081
Net Farm Income (without appreciation)	\$ 95,645	\$ 119,554
Net Farm Income Per Cow (without appreciation)	\$ 698	\$ 880

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

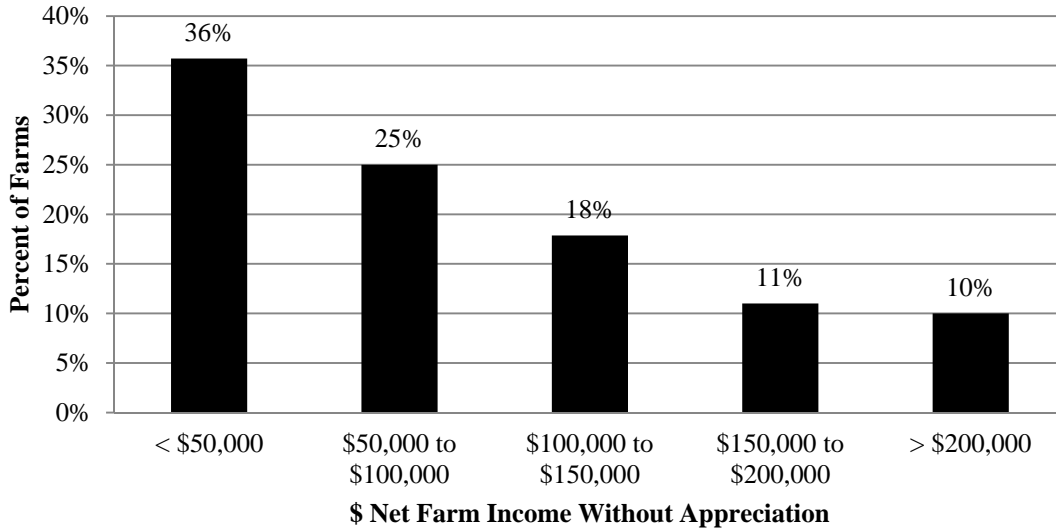
The chart below shows the relationship between net farm income per cow (without appreciation) and pounds of milk sold per cow. Higher net farm incomes can be achieved across a range of production levels as a result of different management systems, such as grazing, being utilized by the participating dairies.

NET FARM INCOME PER COW AND MILK PER COW
28 Intensive Grazing Dairy Farms, 2011



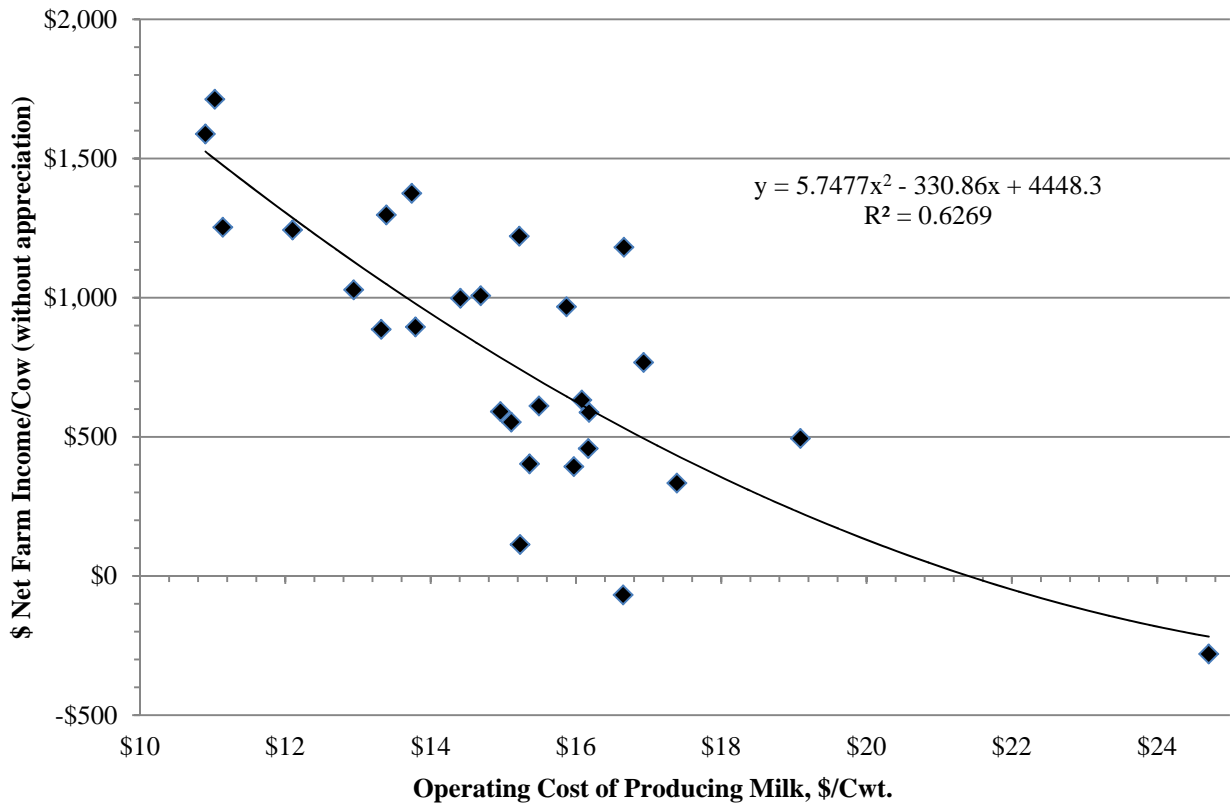
Net farm income without appreciation averaged \$95,645 on these 28 farms in 2011. The range in net farm income without appreciation was from less than \$-12,000 to more than \$397,000. Net farm income was less than \$50,000 on 36 percent of the farms, between \$50,000 and \$150,000 on 43 percent of the farms, while 21 percent had net farm incomes of \$150,000 or more.

**DISTRIBUTION OF NET FARM INCOME WITHOUT APPRECIATION
28 Intensive Grazing Dairy Farms, 2011**



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 hundredweight increased, net farm income per cow fell.

**NET FARM INCOME/COW & OPERATING COST OF PRODUCING MILK/CWT.
28 Intensive Grazing Dairy Farms, 2011**



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.

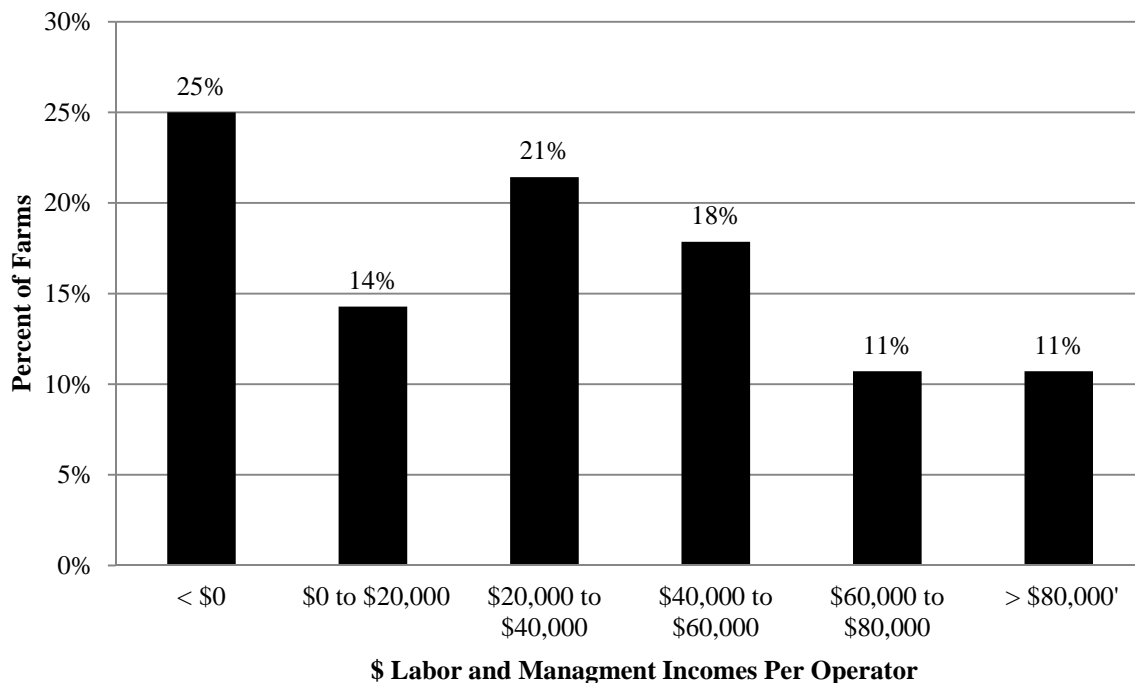
LABOR AND MANAGEMENT INCOME
Intensive Grazing and Non-Grazing Dairy Farms, 2011

Item	28 Grazing Dairy Farms ¹¹	Average Non-Grazing Farms ¹¹
Net farm income without appreciation	\$ 95,645	\$ 119,554
Family labor unpaid @ \$2,550 per month	- 8,406	- 9,554
Interest on average equity capital @ 5% real rate	<u>- 47,483</u>	<u>- 50,517</u>
Labor & Management Income per Farm	\$ 39,757	\$ 59,483
Labor & Management Income per Operator/Manager	\$ 30,582	\$ 40,191
Labor & Management Income per Operator per Cow	\$ 223	\$ 296

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

Labor and management income per operator averaged \$30,582 on these 28 farms in 2011. The range in labor and management income per operator was from less than \$-68,000 to more than \$168,000. Returns to labor and management were less than \$20,000 on 39 percent of the farms. Labor and management incomes per operator were between \$20,000 and \$60,000 on 39 percent of the farms while 22 percent showed labor and management incomes of \$60,000 or more per operator.

DISTRIBUTION OF LABOR & MANAGEMENT INCOMES PER OPERATOR
28 Intensive Grazing Dairy Farms, 2011



The distribution of labor and management incomes per operator on grazing farms is somewhat similar to the distribution for all farms across the State that participate in the DFBS project. A considerable percentage of farms have labor and management incomes per operator less than zero. One comparison to make to the state distribution is the percentage of farms that were above zero labor and management income per operator. For the intensive grazing farms, 75 percent of the farms had returns that were over zero, while for 190 farms across the State, 82 percent had returns greater than zero in 2011.

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 and Non-Grazing Dairy Farms, 2011

Item	28 Grazing Dairy Farms ¹²	Average Non-Grazing Farms ¹²
Net farm income with appreciation	\$ 116,539	\$ 146,864
Family labor unpaid @ \$2,550 per month	- 8,406	- 9,554
Value of operators' labor & management	<u>- 47,823</u>	<u>- 57,948</u>
Return on equity capital with appreciation	\$ 60,310	\$ 79,362
Interest paid	<u>+ 12,168</u>	<u>+ 18,176</u>
Return on total capital with appreciation	\$ 72,479	\$ 97,538
Return on equity capital without appreciation	\$ 39,416	\$ 52,053
Return on total capital without appreciation	\$ 51,585	\$ 70,228
Rate of return on average equity capital:		
with appreciation	6.4%	7.9%
without appreciation	4.2%	5.2%
Rate of return on average total capital:		
with appreciation	5.8%	6.8%
without appreciation	4.2%	4.9%
Net farm income from operations ratio	0.18	0.16

¹²See 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 2011, lease payments were discounted by 7 percent to obtain their present value.

Advanced government receipts are included as current liabilities. Government payments received in 2011 that are for participation in the 2012 program are the end year balance and payments received in 2010 for participation in the 2011 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.

2011 FARM BUSINESS & NONFARM BALANCE SHEET

28 Intensive Grazing Dairy Farms, 2011

Farm Assets			Farm Liabilities & Net Worth		
	Jan. 1	Dec. 31		Jan. 1	Dec. 31
<u>Current</u>			<u>Current</u>		
Farm cash, checking & savings	\$ 15,963	\$ 16,292	Accounts payable	\$ 16,957	\$ 17,249
Accounts receivable	30,385	33,135	Operating debt	21,729	27,987
Prepaid expenses	628	5,971	Short Term	462	0
Feed & supplies	<u>76,593</u>	<u>98,886</u>	Advanced govt. receipts	0	0
Total Current	\$ 123,568	\$ 154,284	Current Portion:		
			Intermediate	16,743	21,944
			Long Term	<u>11,701</u>	<u>13,571</u>
			Total Current	\$ 67,592	\$ 80,751
<u>Intermediate</u>			<u>Intermediate</u>		
Dairy cows:			Structured debt		
owned	\$ 177,759	\$ 170,948	1-10 years	\$ 77,645	\$ 78,984
leased	1	0	Financial lease		
Heifers	95,280	108,160	(cattle/machinery)	1,003	764
Bulls & other livestock	21,122	16,223	Farm Credit stock	<u>345</u>	<u>345</u>
Mach. & equip. owned	203,990	223,803	Total Intermediate	\$ 78,993	\$ 80,093
Mach. & equip. leased	1,003	763			
Farm Credit stock	345	345			
Other stock/certificate	<u>10,455</u>	<u>11,806</u>			
Total Intermediate	\$ 509,953	\$ 532,049			
<u>Long Term</u>			<u>Long Term</u>		
Land & buildings:			Structured debt		
owned	\$ 572,542	\$ 592,535	>10 years	\$ 144,752	\$ 133,448
leased	<u>0</u>	<u>0</u>	Financial lease		
Total Long Term	\$ 572,542	\$ 592,535	(structures)	<u>0</u>	<u>0</u>
			Total Long Term	\$ 144,752	\$ 133,448
Total Farm Assets	\$1,206,063	\$1,278,868	Total Farm Liabilities	\$ 291,337	\$ 294,292
			FARM NET WORTH	\$ 914,726	\$ 984,576
Nonfarm Assets, Liabilities & Net Worth (Average of 16 farms reporting)					
Assets			Liabilities & Net Worth		
	Jan. 1	Dec. 31		Jan. 1	Dec. 31
Personal cash, checking & savings	\$ 19,800	\$ 20,382	Nonfarm Liabilities	\$ 12,399	\$ 12,470
Cash value life insurance	14,673	15,791			
Nonfarm real estate	33,750	33,750			
Auto (personal share)	8,438	10,969			
Stocks & bonds	40,720	44,531			
Household furnishings	9,406	10,031			
All other nonfarm assets	<u>11,438</u>	<u>20,557</u>			
Total Nonfarm Assets	\$138,225	\$156,010	NONFARM NET WORTH	\$125,825	\$143,540
Farm & Nonfarm Assets, Liabilities, and Net Worth ¹³					
Total Assets				\$1,344,288	\$1,434,878
Total Liabilities				<u>303,736</u>	<u>306,762</u>
TOTAL FARM & NONFARM NET WORTH				\$1,040,552	\$1,128,116

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

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

BALANCE SHEET ANALYSIS
Intensive Grazing and Non-Grazing Dairy Farms, 2011

Item	28 Grazing Dairy Farms ¹⁴		Average Non-Grazing Farms ¹⁴	
<u>Financial Ratios - Farm:</u>				
Percent equity	77%		72%	
Debt/asset ratio: total	0.23		0.28	
long-term	0.23		0.27	
intermediate/current	0.23		0.28	
Leverage Ratio	0.30		0.39	
Current Ratio	1.91		2.36	
Working Capital: \$73,533; As % of Expenses	17%		\$128,604	21%
<u>Farm Debt Analysis:</u>				
Accounts payable as % of total debt	6%		5%	
Long-term liabilities as a % of total debt	45%		41%	
Current & inter. liabilities as a % of total debt	55%		59%	
Cost of term debt (weighted average)	3.9%		4.8%	
	28 Grazing Dairy Farms ¹⁴		Average Non-Grazing Farms ¹⁴	
	Per	Per	Per	Per
	Tillable	Tillable	Tillable	Tillable
	Acre	Acre	Acre	Acre
<u>Farm Debt Levels:</u>	Per Cow	Owned	Per Cow	Owned
Total farm debt	\$ 2,279	\$ 1,614	\$ 2,967	\$ 2,365
Long-term debt	1,033	732	1,214	967
Intermediate & long term	1,654	1,171	2,286	1,822
Intermediate & current debt	1,246	882	1,754	1,398

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
28 Intensive Grazing Dairy Farms, 2011

Item	Real Estate		Machinery & Equipment	
Value beginning of year	\$ 572,542		\$ 203,990	
Purchases	\$ 34,989 ¹⁵		\$ 38,466	
Gift & inheritance	+ 0		+ 536	
Lost capital	- 10,196			
Sales	- 0		- 72	
Depreciation	- 15,898		- 26,528	
Net investment	= 8,894		= 12,402	
Appreciation	+ 11,099		+ 7,412	
Value end of year	\$ 592,535		\$ 223,803	

¹⁵\$6,295 land and \$28,694 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 and Non-Grazing Dairy Farms, 2011

Item	28 Grazing Dairy Farms ¹⁶	Average Non-Grazing Farms ¹⁶
Beginning of year farm net worth	\$ 914,726	\$959,769
Net farm income w/o appreciation	\$ 95,645	\$ 119,554
+Nonfarm cash income	+ 11,779	+ 6,729
-Personal withdrawals & family expenditures excluding nonfarm borrowings	- 54,883	- 52,021
RETAINED EARNINGS	+\$ 52,541	+\$ 74,262
Nonfarm noncash transfers to farm	\$ 536	\$ 167
+Cash used in business from nonfarm capital	+ 5,309	+ 6,618
-Note or mortgage from farm real estate sold (nonfarm)	- 0	- 0
CONTRIBUTED/ WITHDRAWN CAPITAL	+\$ 5,845	+\$ 6,785
Appreciation	\$ 20,894	\$ 27,309
-Lost capital	- 10,196	- 9,953
CHANGE IN VALUATION EQUITY	+\$ 10,698	+\$ 17,357
IMBALANCE/ERROR	- 767	- 2,750
End of year net worth ¹⁷	=\$984,576	=\$1,060,922
<hr/>		
<u>Change in Net Worth</u>		
Without appreciation	\$ 48,956	\$ 73,844
With appreciation	\$ 69,850	\$ 101,154

¹⁶See page 1 for a description of these groups of farms.

¹⁷May 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
28 Intensive Grazing Dairy Farms, 2011

Item	Average	
<u>Cash Flow from Operating Activities</u>		
Cash farm receipts	\$ 513,884	
- Cash farm expenses	402,072	
- Extraordinary expense	<u>0</u>	
= Net cash farm income		\$ 111,812
Personal withdrawals & family expenses including nonfarm debt payments	\$ 57,541	
- Nonfarm income	<u>11,779</u>	
- Net cash withdrawals from the farm		<u>\$ 45,763</u>
= Net Provided by Operating Activities		\$ 66,050
<u>Cash Flow From Investing Activities</u>		
Sale of assets: machinery	\$ 72	
+ real estate	0	
+ other stock & cert.	<u>262</u>	
= Total asset sales		\$ 334
Capital purchases: expansion livestock	\$ 3,720	
+ machinery	38,466	
+ real estate	34,989	
+ other stock & cert.	<u>517</u>	
- Total invested in farm assets		<u>\$ 77,691</u>
= Net Provided by Investment Activities		\$ -77,357
<u>Cash Flow From Financing Activities</u>		
Money borrowed (intermediate & long term)	\$ 41,352	
+ Money borrowed (short term)	1,260	
+ Increase in operating debt	6,258	
+ Cash from nonfarm capital used in business	5,309	
+ Money borrowed - nonfarm	<u>2,658</u>	
= Cash inflow from financing		\$ 56,837
Principal payments (intermediate & long term)	\$ 44,245	
+ Principal payments (short term)	1,722	
+ Decrease in operating debt	<u>0</u>	
- Cash outflow for financing		<u>\$ 45,967</u>
= Net Provided by Financing Activities		\$ 10,871
<u>Cash Flow From Reserves</u>		
Beginning farm cash, checking & savings		\$ 15,963
- Ending farm cash, checking & savings		<u>16,292</u>
= Net Provided from Reserves		\$ -330
Imbalance (error)		<u>\$ -767</u>

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 2012. The cash flow projection worksheet on the next page can be used to estimate repayment ability, which can then be compared to planned 2012 debt payments shown below.

FARM DEBT PAYMENTS PLANNED

Same Intensive Grazing and Non-Grazing Dairy Farms, 2010 & 2011

Debt Payments	Same 24 Grazing Dairy Farms			Same 54 Non-Grazing Dairy Farms		
	2011 Payments		Planned 2012	2011 Payments		Planned 2012
	Planned	Made		Planned	Made	
Long term	\$ 20,274	\$ 29,389	\$ 20,825	\$ 21,298	\$ 24,966	\$ 24,146
Intermediate term	25,326	27,966	27,478	46,494	51,552	45,931
Short term	1,707	1,695	0	1,511	4,222	2,300
Operating (net reduction)	957	9,197	396	1,920	4,579	5,739
Accounts payable (net reduction)	0	3,765	0	1,231	13,449	133
Total	\$ 48,265	\$ 72,012	\$ 48,699	\$ 72,454	\$ 98,768	\$ 78,248
Per cow	\$ 329	\$ 491		\$ 518	\$ 706	
Per cwt. 2011 milk	\$ 2.24	\$ 3.35		\$ 2.31	\$ 3.14	
Percent of total 2011 farm receipts	9%	13%		10%	13%	
Percent of 2011 milk receipts	10%	15%		11%	15%	

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 2011 (as of December 31, 2010) that could have been made with the amount available for debt service in 2011. Farmers who did not participate in DFBS in 2010 have their 2011 coverage ratios based on planned debt payments for 2012.

COVERAGE RATIOS

Same Intensive Grazing and Non-Grazing Dairy Farms, 2010 & 2011

Item	Average	Item	Average
Same 24 Grazing Dairy Farms, 2010 & 2011			
(A)=Amount Available for Debt Service	\$ 85,985	(A')=Repayment Capacity	\$ 111,965
(B)=Debt Payments Planned for 2011	\$ 48,265	(B)=Debt Payments Planned for 2011	\$ 48,265
(A/B)=Cash Flow Coverage Ratio for 2011	1.78	(A'/B)=Debt Coverage Ratio for 2011	2.32

Same 54 Farms Non-Grazing Dairy Farms, 2010 & 2011			
(A)=Amount Available for Debt Service	\$ 105,648	(A')=Repayment Capacity	\$ 141,166
(B)=Debt Payments Planned for 2011	\$ 72,454	(B)=Debt Payments Planned for 2011	\$ 72,454
(A/B)=Cash Flow Coverage Ratio for 2011	1.46	(A'/B)=Debt Coverage Ratio for 2011	1.95

ANNUAL CASH FLOW WORKSHEET
Intensive Grazing and Non-Grazing Dairy Farms, 2011

Item	28 Grazing Dairy Farms		Average Non-Grazing Farms	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average no. of cows	137		136	
Total cwt. of milk sold		20,680		30,443
<u>Accrual Operating Receipts</u>				
Milk	\$3,304	\$21.90	\$4,806	\$21.45
Dairy cattle	240	1.59	242	1.08
Dairy calves	51	0.34	37	0.17
Other livestock	48	0.32	5	0.02
Crops	114	0.76	111	0.49
Misc. Receipts	<u>117</u>	<u>0.77</u>	<u>139</u>	<u>0.62</u>
Total	\$3,874	\$25.67	\$5,340	\$23.83
<u>Accrual Operating Expenses</u>				
Hired labor	\$ 308	\$ 2.04	\$ 450	\$ 2.01
Dairy grain & concentrate	934	6.19	1,419	6.33
Dairy roughage	144	0.95	118	0.53
Nondairy feed	1	0.01	1	0.00
Professional nutritional services	0	0.00	1	0.00
Mach. hire, rent & lease	95	0.63	112	0.50
Mach. repair & vehicle expense	173	1.14	242	1.08
Fuel, oil & grease	129	0.85	218	0.97
Replacement livestock	10	0.07	63	0.28
Breeding	34	0.23	61	0.27
Vet & medicine	73	0.49	135	0.60
Milk marketing	146	0.97	204	0.91
Bedding	30	0.20	83	0.37
Milking supplies	63	0.42	104	0.46
Cattle lease	10	0.07	5	0.02
Custom boarding	9	0.06	49	0.22
bST expense	2	0.02	21	0.09
Livestock professional fees	15	0.10	19	0.08
Other livestock expense	29	0.19	34	0.15
Fertilizer & lime	127	0.84	130	0.58
Seeds & plants	36	0.24	86	0.38
Spray & other crop expense	24	0.16	48	0.22
Crop professional fees	11	0.07	7	0.03
Land, bldg., fence repair	66	0.43	51	0.23
Taxes	82	0.54	74	0.33
Real estate rent & lease	56	0.37	48	0.22
Insurance	43	0.28	58	0.26
Utilities	74	0.49	122	0.54
Miscellaneous	<u>29</u>	<u>0.19</u>	<u>41</u>	<u>0.18</u>
Total Less Interest Paid	\$2,750	\$18.23	\$4,003	\$17.87
<u>Net Accrual Operating Income</u>		<u>Total</u>		<u>Total</u>
(without interest paid)		\$ 153,960		\$ 181,574
- Change in livestock & crop invent. ¹⁸		14,317		7,424
- Change in accounts receivable		2,750		6,684
- Change in feed & supply inventory ¹⁹		13,204		12,414
+ Change in accounts payable ²⁰		<u>581</u>		<u>-9,788</u>
NET CASH FLOW		\$ 124,270		\$ 145,264
- Net family withdrawals		<u>42,193</u>		<u>43,646</u>
Available for Farm		\$ 82,078		\$ 101,617
- Farm debt payments		<u>68,184</u>		<u>94,331</u>
Available for Farm Investment		\$ 13,893		\$ 7,286
- Capital purchases		<u>77,691</u>		<u>92,320</u>
Additional Capital Needed		\$ 63,798		\$ 85,034

¹⁸Includes change in advance government receipts. ¹⁹Includes change in prepaid expenses. ²⁰Excludes 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 and Non-Grazing Dairy Farms, 2011

Item	28 Grazing Dairy Farms ²²			Average Non-Grazing Farms ²²		
	<u>Owned</u>	<u>Rented</u>	<u>Total</u>	<u>Owned</u>	<u>Rented</u>	<u>Total</u>
<u>Land</u>						
Tillable	182	130	312	174	158	332
Nontillable	30	17	47	33	8	41
Other nontill.	<u>118</u>	<u>12</u>	<u>130</u>	<u>80</u>	<u>2</u>	<u>82</u>
Total	330	159	489	287	168	455
<u>Crop Yields</u>	<u>Farms</u>	<u>Acres²¹</u>	<u>Prod/Acre</u>	<u>Farms</u>	<u>Acres²¹</u>	<u>Prod/Acre</u>
Hay crop	26	204	2.6 tn DM	52	207	2.8 tn DM
Corn silage	17	65	16.9 tn	51	104	15.7 tn
			6.3 tn DM			5.6 tn DM
Other forage	2	13	2.7 tn DM	4	35	2.8 tn DM
Total forage	26	248	3.2 tn DM	55	295	3.7 tn DM
Corn grain	7	22	109 bu	19	65	121 bu
Oats	4	19	24 bu	2	27	59 bu
Wheat	2	11	45 bu	3	47	38 bu
Other crops	2	31		17	74	
Tillable pasture	11	176		8	29	
Idle	3	23		11	12	
Total Tillable Acres	28	312		58	332	

²¹This column represents the average acreage for the farms producing that crop. For the 28 intensive grazing dairy farms, average acreages including those farms not producing were hay crop 189, corn silage 40, corn grain 5, oats 3, wheat 1, tillable pasture 69, and idle 3.

Average crop acres and yields compiled for the grazing farms 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 and Non-Grazing Dairy Farms, 2011

Item	28 Grazing Dairy Farms ²²	Average Non-Grazing Farms ²²
Total tillable acres per cow	2.50	2.55
Total forage acres per cow	1.89	2.19
Harvested forage dry matter, tons per cow	6.06	8.16

²²See page 1 for a description of these groups of farms. Excludes farms that do not harvest forages.

Cropping Analysis (continued)

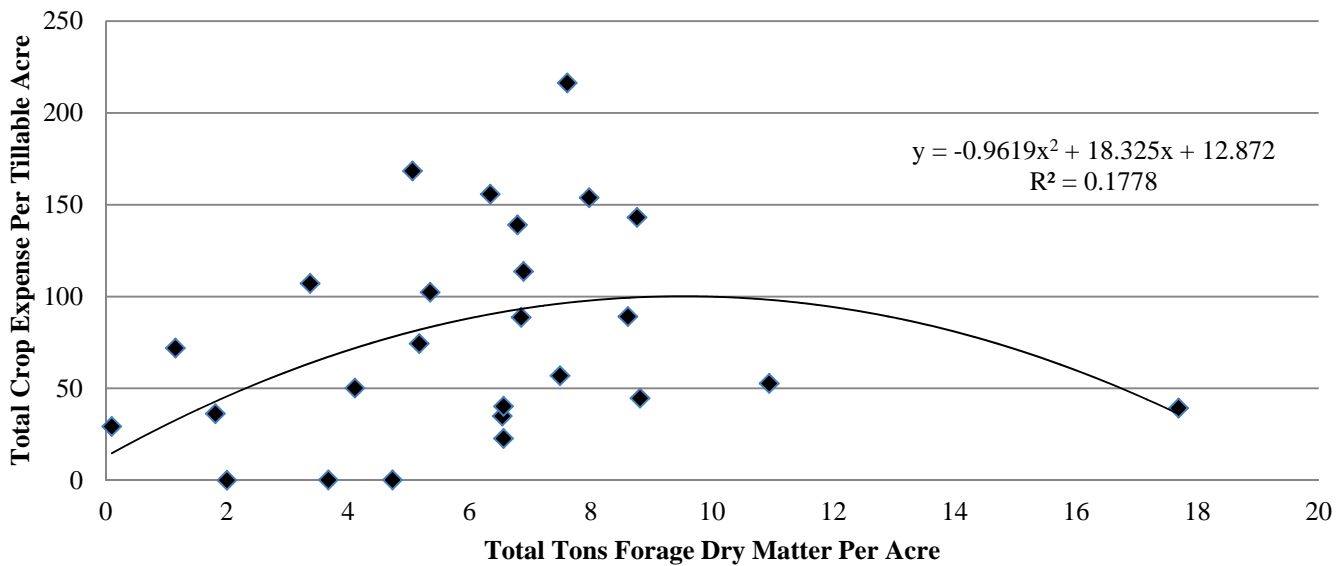
Crop input costs per tillable acre are reported in the table below. The chart below shows the relationship between total forage dry matter per acre and total crop input costs.

CROP RELATED ACCRUAL EXPENSES
Intensive Grazing and Non-Grazing Dairy Farms That Harvest Forages, 2011

Item	Total Per Tillable Acre	
	26 Grazing Dairy Farms ²³	Average Non-Grazing Farms ²³
Number of farms reporting	26	55
Average number of acres	328	344
Fertilizer & lime expense	\$ 44.74	\$ 51.91
Seeds & plants	19.38	35.33
Spray & other crop expenses	<u>14.01</u>	<u>19.17</u>
TOTAL	\$ 78.13	\$ 106.41

²³See page 1 for a description of these groups of farms. Excludes farms that do not harvest forages.

CROP EXPENSE PER ACRE AND TOTAL FORAGE PRODUCTION PER ACRES
26 Intensive Grazing Dairy Farms, 2011



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 and Non-Grazing Dairy Farms That Harvest Forages, 2011

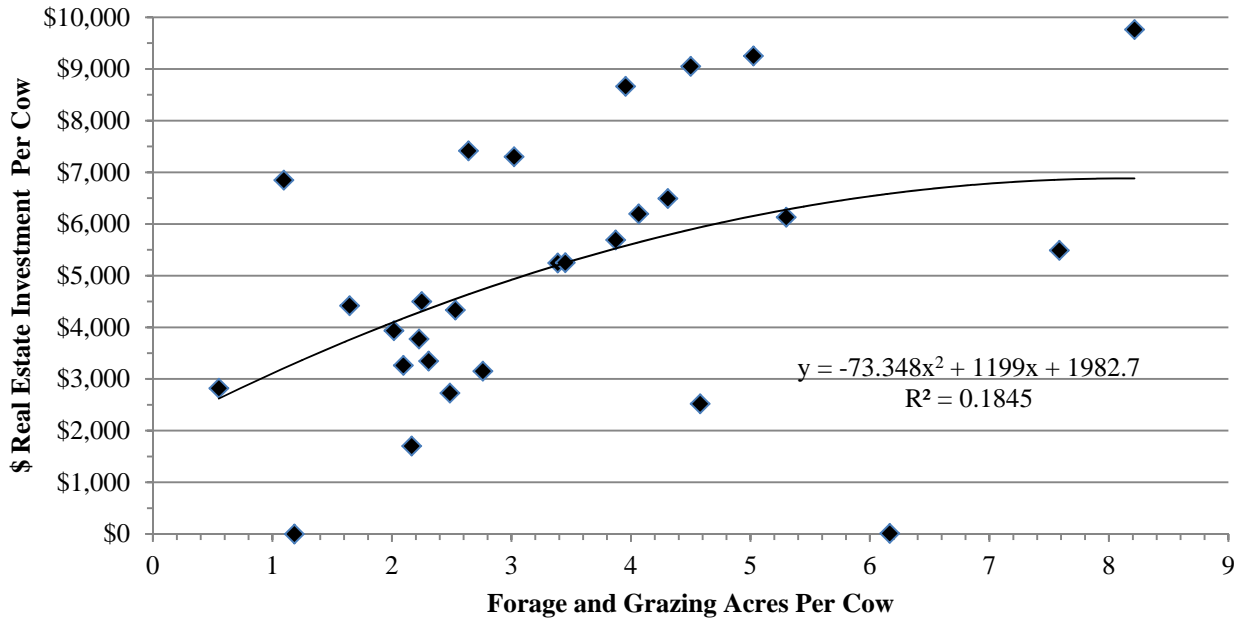
Machinery Expense	26 Grazing Dairy Farms ²⁴		Average Non-Grazing Farms ²⁴	
	Total Expenses	Per Tillable Acre	Total Expenses	Per Tillable Acre
Fuel, oil & grease	\$ 18,162	\$ 55.31	\$ 29,679	\$ 86.40
Mach. repair & vehicle exp.	23,962	72.98	33,388	97.20
Machine hire, rent & lease	12,646	38.51	15,689	45.67
Interest (5%)	11,068	33.71	14,372	41.84
Depreciation	<u>26,570</u>	<u>80.92</u>	<u>27,117</u>	<u>78.94</u>
Total	\$ 92,408	\$281.43	\$120,246	\$350.05

²⁴See page 1 for a description of these groups of farms. Excludes farms that do not harvest forages.

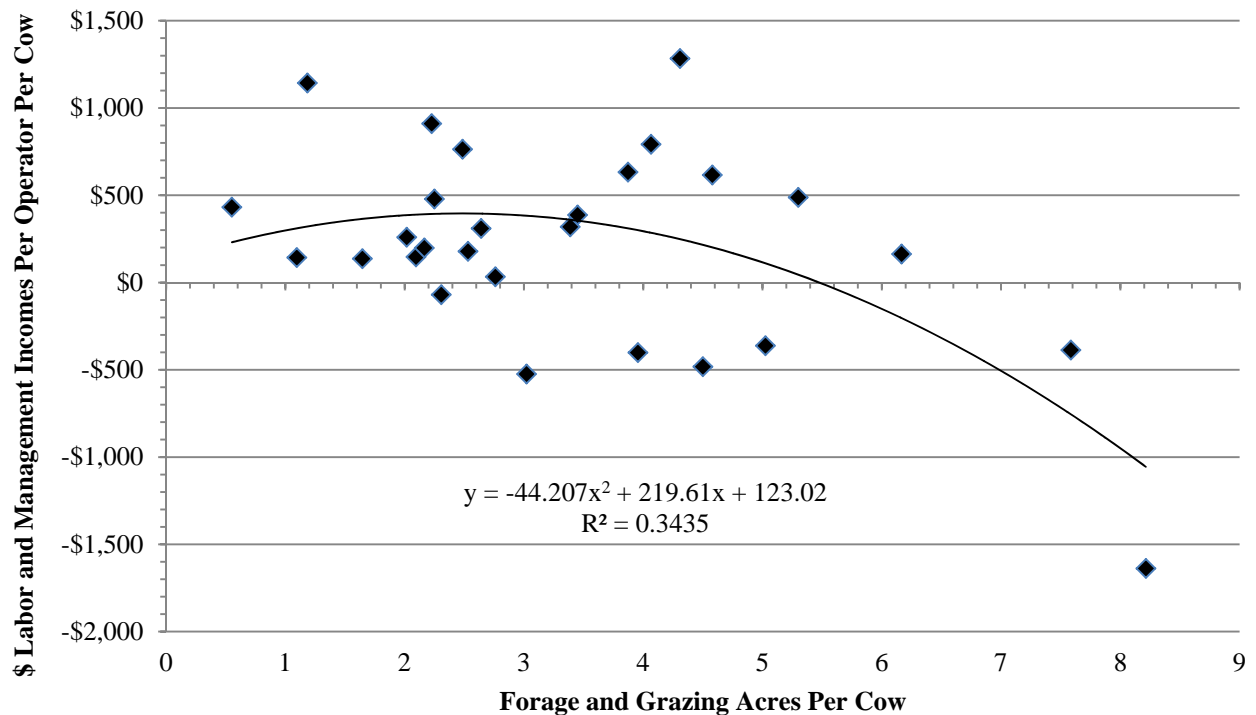
Cropping Analysis (continued)

The charts below show the relationship between the stocking rate (forage and grazing acres per cow) and labor and management income per operator per cow and real estate investment per cow. Stocking rate is total tillable acres plus nontillable pasture acres less corn grain acres, all divided by the average number of cows.

**REAL ESTATE INVESTMENT/COW & FORAGE AND GRAZING ACRES/COW
28 Intensive Grazing Farms, 2011**



**LABOR AND MANAGEMENT INCOMES/OPERATOR/COW & FORAGE AND
GRAZING ACRES/COW
28 Intensive Grazing Farms, 2011**



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 20 through 23.

DAIRY HERD INVENTORY

Intensive Grazing and Non-Grazing Dairy Farms, 2011

Item	Dairy Cows		Bred Heifers		Open Heifers		Calves	
	No.	Value	No.	Value	No.	Value	No.	Value
28 Grazing Dairy Farms²⁵								
Beg. year (owned)	136	\$ 177,759	40	\$ 51,534	33	\$ 24,901	29	\$ 18,845
+ Change w/o apprec.		-7,139		7,096		996		3,829
+ Appreciation		<u>329</u>		<u>884</u>		<u>75</u>		<u>0</u>
End year (owned)	131	\$ 170,948	45	\$ 59,514	34	\$ 25,973	34	\$ 22,673
End including leased	129							
Average number	137		109	(all age groups)				
Average Non-Grazing Farms²⁵								
Beg. year (owned)	134	\$ 184,112	38	\$ 51,823	39	\$ 33,472	35	\$ 16,750
+ Change w/o apprec.		1,182		1,003		-206		251
+ Appreciation		<u>571</u>		<u>232</u>		<u>131</u>		<u>273</u>
End year (owned)	136	\$ 185,865	39	\$ 53,059	38	\$ 33,396	36	\$ 17,274
End including leased	138							
Average number	136		114	(all age groups)				

²⁵ 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 and Non-Grazing Dairy Farms, 2011

Item	28 Grazing Dairy Farms ²⁶	Average Non-Grazing Farms ²⁶
Total milk sold, pounds	2,067,971	3,044,291
Milk sold per cow, pounds	15,087	22,408
Average milk plant test, percent butterfat	4.10%	3.78%

²⁶ See page 1 for a description of these groups of farms.

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

ANIMALS LEAVING THE HERD

Intensive Grazing and Non-Grazing Dairy Farms, 2011

Item	28 Grazing Dairy Farms		Average Non-Grazing Farms	
	Number	Percent ²⁷	Number	Percent ²⁷
Cows sold for beef	30	22.2	39	28.4
Cows sold for dairy	8	5.9	1	1.1
Cows died	6	4.0	8	6.1
Culling rate ²⁸		26.0		34.0

²⁷ Percent of average number of cows in the herd. ²⁸ 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 and Non-Grazing Dairy Farms, 2011

Item	28 Grazing Dairy Farms ²⁹		Average Non-Grazing Farms ²⁹	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Accrual Cost of Producing Milk				
Operating costs	\$ 2,297	\$ 15.23	\$ 3,612	\$ 16.12
Purchased inputs costs	\$ 2,607	\$ 17.28	\$ 3,926	\$ 17.52
Total Costs	\$ 3,363	\$ 22.29	\$ 4,794	\$ 21.40
Accrual Receipts From Milk				
Net milk receipts	\$ 3,304	\$ 21.90	\$ 4,806	\$ 21.45
Net Farm Income	\$ 3,158	\$ 20.93	\$ 4,602	\$ 20.54
without Appreciation	\$ 698	\$ 4.63	\$ 880	\$ 3.93
Net Farm Income	\$ 850	\$ 5.64	\$ 1,081	\$ 4.82

²⁹ 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 and Non-Grazing Dairy Farms, 2011

Item	28 Grazing Dairy Farms ²⁹		Average Non-Grazing Farms ²⁹	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Purchased dairy grain & concentrate	\$ 934	\$ 6.19	\$ 1,419	\$ 6.33
Purchased dairy roughage	144	0.95	118	0.53
Total Purchased Dairy Feed	\$ 1,078	\$ 7.14	\$ 1,537	\$ 6.86
Purchased grain & concentrate as % of milk receipts		30%		29%
Purchased feed & crop expense	\$ 1,275	\$ 8.45	\$ 1,808	\$ 8.07
Purchased feed & crop expense as % of milk receipts		39%		37%
Breeding	\$ 34	\$ 0.23	\$ 61	\$ 0.27
Veterinary & medicine	73	0.49	135	0.60
Milk marketing	146	0.97	204	0.91
Bedding	30	0.20	83	0.37
Milking supplies	63	0.42	104	0.46
Cattle lease	10	0.07	5	0.02
Custom boarding	9	0.06	49	0.22
bST expense	2	0.02	21	0.09
Livestock professional fees	15	0.10	19	0.08
Other livestock expense	29	0.19	34	0.15

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 and Non-Grazing Dairy Farms, 2011

Item	Per Worker	Per Cow	Per Tillable Acre	Per Tillable Acre Owned
<u>28 Grazing Dairy Farms</u> ³⁰				
Farm capital	\$ 421,175	\$ 9,064	\$ 3,975	\$ 6,813
Real estate		4,250		3,194
Machinery & equipment	72,807	1,567	687	
<u>Ratios:</u>				
Asset Turnover Ratio 0.44	Operating Expense 0.72	Interest Expense 0.02	Depreciation Expense 0.08	
<u>Average Non-Grazing Farms</u> ³⁰				
Farm capital	\$ 361,327	\$ 10,505	\$ 4,306	\$ 8,215
Real estate		4,403		3,443
Machinery & equipment	72,100	2,096	859	
<u>Ratios:</u>				
Asset Turnover Ratio 0.53	Operating Expense 0.75	Interest Expense 0.03	Depreciation Expense 0.06	

³⁰ See page 1 for a description of these groups of farms.

Capital and Labor Efficiency Analysis (continued)

LABOR FORCE INVENTORY AND ANALYSIS
Intensive Grazing and Non-Grazing Dairy Farms, 2011

Labor Force	Months	Age	Years of Education	Value of Labor & Management
<u>28 Grazing Dairy Farms</u>				
Operator number 1	12.8	48	14	\$ 36,405
Operator number 2	4.1	46	14	11,418
Family paid	3.5			
Family unpaid	3.3			
Hired	<u>11.7</u>			
Total	35.4	/ 12 = 2.95 Worker Equivalent 1.30 Operator/Manager Equivalent		
<u>Average Non-Grazing Farms</u>				
Total Labor Force	47.5	/ 12 = 3.96 Worker Equivalent		
Operator's Labor		1.48 Operator/Manager Equivalent		

Labor Efficiency	<u>28 Grazing Dairy Farms</u>		<u>Average Non-Grazing Farms</u>	
	Total	Per Worker	Total	Per Worker
Cows, average number	137	47	136	34
Milk sold, pounds	2,067,971	701,602	3,044,291	769,732
Tillable acres	313	106	331	84

Labor Costs	<u>28 Grazing Dairy Farms</u>		<u>Average Non-Grazing Farms</u>	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Value of operator(s) labor (\$2,550/month)	\$ 313	\$ 2.08	\$ 380	\$ 1.69
Family unpaid (\$2,550/month)	61	0.41	70	0.31
Hired	<u>308</u>	<u>2.04</u>	<u>450</u>	<u>2.01</u>
Total Labor	\$ 683	\$ 4.52	\$ 900	\$ 4.02
Machinery Cost	<u>\$ 668</u>	<u>\$ 4.42</u>	<u>\$ 879</u>	<u>\$ 3.92</u>
Total Labor & Machinery	\$ 1,350	\$ 8.95	\$ 1,779	\$ 7.94
Hired labor expense per hired worker equivalent	\$33,260		\$31,228	
Hired labor expense as % of milk sales	9.3%		9.4%	

COMPARATIVE ANALYSIS OF THE FARM BUSINESS

Progress of the Farm Business

Comparing your business with average data from regional DFBS cooperators that participated in both of the last two years can be helpful to establishing your goals for these parameters. It is equally important for you to determine the progress your business has made over the past two or three years, to compare this progress to your goals, and to set goals for the future.

PROGRESS OF THE FARM BUSINESS

Intensive Grazing and Non-Grazing Dairy Farms, 2010 & 2011³¹

Selected Factors	Same 24 Grazing Dairy Farms		Same 54 Non-Grazing Dairy Farms	
	2010	2011	2010	2011
<u>Size of Business</u>				
Average number of cows	147	147	139	140
Average number of heifers	108	115	114	118
Milk sold, pounds	2,233,746	2,150,344	3,116,409	3,142,510
Worker equivalent	3.03	3.13	3.99	4.06
Total tillable acres	331	341	336	342
<u>Rates of Production</u>				
Milk sold per cow, pounds	15,208	14,666	22,396	22,461
Hay DM per acre, tons	2.2	2.6	2.9	2.9
Corn silage per acre, tons	19.9	16.7	19.4	15.7
<u>Labor Efficiency</u>				
Cows per worker	48	47	35	34
Milk sold/worker, pounds	737,210	687,011	781,055	774,017
<u>Cost Control and Milk Price</u>				
Grain & concentrate purchased as % of milk sales	25%	28%	30%	29%
Dairy feed & crop expense per cwt. milk	\$ 6.44	\$ 8.40	\$ 6.81	\$ 8.04
Labor & machinery costs/cow	\$ 1,146	\$ 1,335	\$ 1,642	\$ 1,777
Operating cost of producing cwt. of milk	\$ 12.12	\$ 15.19	\$ 13.87	\$ 16.07
Net milk price	\$ 17.25	\$ 20.99	\$ 16.70	\$ 20.57
<u>Capital Efficiency</u> ³²				
Farm capital per cow	\$ 8,483	\$ 9,064	\$ 9,960	\$ 10,524
Machinery & equipment per cow	\$ 1,456	\$ 1,546	\$ 2,026	\$ 2,106
Asset turnover ratio	0.42	0.44	0.47	0.53
<u>Profitability</u>				
Net farm income without appreciation	\$ 95,118	\$ 102,056	\$ 79,036	\$ 124,972
Net farm income with appreciation	\$ 122,541	\$ 123,927	\$ 94,020	\$ 153,505
Labor & management income per operator/manager	\$ 32,268	\$ 32,364	\$ 14,341	\$ 41,897
Rate of return on equity capital with appreciation	6.9%	6.5%	2.7%	8.1%
Rate of return on all capital with appreciation	6.4%	5.9%	3.3%	7.0%
<u>Financial Summary</u>				
Farm net worth, end year	\$ 978,337	\$ 1,061,335	\$ 984,122	\$ 1,089,208
Debt to asset ratio	0.23	0.22	0.31	0.28
Farm debt per cow	\$ 2,036	\$ 2,236	\$ 3,146	\$ 3,000

³¹Farms participating both years.

³²Average for the year.

RECEIPTS AND EXPENSES PER COW AND PER CWT.

Same 24 Intensive Grazing Dairy Farms, 2010 & 2011

Item	2010		2011	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average Number of Cows	147		147	
Cwt. Of Milk Sold		22,337		21,503
<u>ACCRUAL OPERATING RECEIPTS</u>				
Milk	\$2,772	\$18.23	\$3,220	\$21.96
Dairy cattle	290	1.90	235	1.60
Dairy calves	60	0.39	51	0.35
Other livestock	123	0.81	49	0.33
Crops	41	0.27	125	0.85
Miscellaneous receipts	<u>107</u>	<u>0.71</u>	<u>122</u>	<u>0.83</u>
Total Receipts	\$3,393	\$22.31	\$3,801	\$25.92
<u>ACCRUAL OPERATING EXPENSES</u>				
Hired labor	\$ 250	\$ 1.64	\$ 324	\$ 2.21
Dairy grain & concentrate	692	4.55	902	6.15
Dairy roughage	113	0.74	134	0.91
Nondairy feed	0	0.00	2	0.01
Professional nutritional services	0	0.00	0	0.00
Machine hire/rent/lease	93	0.61	88	0.60
Machinery repair & vehicle expense	155	1.02	177	1.20
Fuel, oil & grease	96	0.63	132	0.90
Replacement livestock	5	0.03	3	0.02
Breeding	30	0.20	32	0.22
Veterinary & medicine	59	0.39	70	0.47
Milk marketing	149	0.98	141	0.96
Bedding	22	0.14	26	0.18
Milking supplies	46	0.30	57	0.39
Cattle lease	7	0.04	11	0.07
Custom boarding	72	0.48	7	0.05
bST expense	1	0.01	1	0.01
Livestock professional fees	6	0.04	14	0.10
Other livestock expense	36	0.23	30	0.20
Fertilizer & lime	120	0.79	124	0.85
Seeds & plants	36	0.23	36	0.25
Spray/other crop expense	12	0.08	25	0.17
Crop professional fees	8	0.05	11	0.08
Land, building, fence repair	40	0.26	66	0.45
Taxes	81	0.53	85	0.58
Real estate rent/lease	51	0.34	53	0.36
Insurance	48	0.32	43	0.29
Utilities	73	0.48	71	0.48
Interest paid	101	0.66	86	0.59
Other professional fees	15	0.10	9	0.06
Miscellaneous	<u>36</u>	<u>0.24</u>	<u>21</u>	<u>0.14</u>
Total Operating Expenses	\$2,452	\$16.12	\$2,780	\$18.95
Expansion Livestock	13	0.08	29	0.20
Extraordinary Expense	0	0.00	0	0.00
Machinery Depreciation	155	1.02	184	1.25
Real Estate Depreciation	<u>126</u>	<u>0.83</u>	<u>113</u>	<u>0.77</u>
Total Expenses	\$2,746	\$18.05	\$3,106	\$21.17
Net Farm Income Without Appreciation	\$ 648	\$ 4.26	\$ 696	\$ 4.75

RECEIPTS AND EXPENSES PER COW AND PER CWT.

Same 54 Non-Grazing Dairy Farms, 2010 & 2011

Item	2010		2011	
	Per Cow	Per Cwt.	Per Cow	Per Cwt.
Average Number of Cows	139		140	
Cwt. Of Milk Sold		31,164		31,425
<u>ACCRUAL OPERATING RECEIPTS</u>				
Milk	\$3,947	\$17.62	\$4,820	\$21.46
Dairy cattle	203	0.91	246	1.10
Dairy calves	47	0.21	39	0.17
Other livestock	3	0.01	6	0.03
Crops	214	0.96	111	0.49
Miscellaneous receipts	<u>117</u>	<u>0.52</u>	<u>134</u>	<u>0.60</u>
Total Receipts	\$4,531	\$20.23	\$5,355	\$23.84
<u>ACCRUAL OPERATING EXPENSES</u>				
Hired labor	\$ 428	\$ 1.91	\$ 452	\$ 2.01
Dairy grain & concentrate	1,191	5.32	1,419	6.32
Dairy roughage	106	0.47	114	0.51
Nondairy feed	3	0.01	1	0.00
Professional nutritional services	0	0.00	0	0.00
Machine hire/rent/lease	98	0.44	111	0.49
Machinery repair & vehicle expense	205	0.91	239	1.07
Fuel, oil & grease	166	0.74	219	0.97
Replacement livestock	35	0.16	66	0.29
Breeding	60	0.27	61	0.27
Veterinary & medicine	128	0.57	137	0.61
Milk marketing	206	0.92	200	0.89
Bedding	68	0.30	82	0.36
Milking supplies	93	0.41	102	0.45
Cattle lease	5	0.02	5	0.02
Custom boarding	45	0.20	50	0.22
bST expense	32	0.14	20	0.09
Livestock professional fees	16	0.07	18	0.08
Other livestock expense	28	0.12	35	0.15
Fertilizer & lime	103	0.46	132	0.59
Seeds & plants	78	0.35	86	0.38
Spray/other crop expense	41	0.18	48	0.22
Crop professional fees	6	0.03	7	0.03
Land, building, fence repair	44	0.20	51	0.23
Taxes	84	0.37	75	0.33
Real estate rent/lease	55	0.24	50	0.22
Insurance	53	0.23	57	0.25
Utilities	125	0.56	122	0.54
Interest paid	140	0.62	136	0.60
Other professional fees	19	0.09	18	0.08
Miscellaneous	<u>21</u>	<u>0.09</u>	<u>24</u>	<u>0.11</u>
Total Operating Expenses	\$3,608	\$16.43	\$4,136	\$18.41
Expansion Livestock	10	0.04	9	0.04
Extraordinary Expense	3	0.01	11	0.05
Machinery Depreciation	186	0.83	205	0.91
Real Estate Depreciation	<u>84</u>	<u>0.38</u>	<u>101</u>	<u>0.45</u>
Total Expenses	\$3,963	\$17.69	\$4,462	\$19.86
Net Farm Income Without Appreciation	\$ 568	\$ 2.54	\$ 893	\$ 3.98

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

28 Intensive Grazing Dairy Farms, 2011

Size of Business								Rates of Production		
Worker Equivalent	No. of Cows	No. of Heifers	Pounds Milk Sold	Hay Acres	All Pasture & Hay Acres	Nontillable Pasture & Tillable Acres	Stocking Rate	Pounds Milk Sold Per Cow	Tons Hay DM/Acre	Tons Corn Silage Per Acre
(14) ³³	(12)	(12)	(12)	(11)	(11)	(11)	(11)	(12)	(11)	(11)
6.40	392	297	5,050,090	488	685	778	6.1	21,609	3.8	22
3.29	160	141	2,808,521	213	290	373	4.0	20,038	2.6	19
2.50	86	76	1,471,371	168	216	269	2.8	17,908	2.1	18
1.84	53	43	1,043,843	106	175	191	2.2	15,638	1.8	16
1.35	40	26	586,476	25	106	117	1.3	10,294	1.2	10
Labor Efficiency and Costs				Cost Control						
Cows Per Worker	Pounds Milk Sold Per Worker	Hired Labor Cost Per Worker	Hired Labor Cost as % of Milk Sales	% Grain is of Milk Receipts	Machinery Costs Per Cow	Labor & Machinery Costs per Cow	Feed & Crop Expenses Per Cow	Feed & Crop Expenses Per Cwt.		
(14)	(14)	(14)	(14)	(12)	(14)	(14)	(12)	(12)		
75	1,097,000	\$857	0%	19%	\$381	\$1,000	\$883	\$6.30		
48	832,357	14,067	3	27	570	1,336	1,261	7.83		
38	676,843	29,987	4	31	812	1,737	1,467	8.71		
30	530,818	38,394	8	34	1,116	1,968	1,668	9.52		
21	307,072	58,393	15	41	1,308	2,603	1,923	10.92		
Value and Cost of Milk Production				Profitability						
Net Milk Receipts Per Cwt.	Milk Receipts Per Cow	Operating Cost Milk Prod. Per Cwt.	Total Cost Production Per Cwt.	Net Farm Income with Appreciation	Net Farm Income w/o Appreciation	Labor & Mgmt. Income Per Operator	Labor & Mgmt. Income Per Oper. Per Cow			
(12)	(12)	(12)	(12)	(4)	(4)	(4)	(4)			
\$22.68	\$4,564	\$11.91	\$18.70	\$295,419	\$235,230	\$112,980	\$921			
21.38	4,370	14.16	21.01	155,772	137,442	48,910	453			
20.51	3,791	15.38	22.75	93,178	79,423	32,448	209			
20.00	3,321	16.21	25.50	58,792	45,994	10,180	-24			
19.29	2,404	18.96	34.29	15,887	10,367	-33,166	-686			
Profitability, continued			Capital Efficiency			Financial Summary				
Rate Return on Equity Capital Without Appreciation	Rate Return on All Capital Without Appreciation	Government Receipts Per Cwt.	Farm Capital Per Cow	Machinery & Equipment Per Cow	Asset Turnover Ratio	Debt to Asset Ratio	Farm Debt Per Cow	Change in Net Worth with Appreciation		
(4)	(4)	(4)	(14)	(14)	(14)	(7)	(7)	(8)		
18%	11%	\$2.26	\$5,520	\$717	0.93	0.00	\$5	\$245,345		
7	7	0.20	8,609	1,377	0.53	0.12	1,013	91,925		
4	4	0.10	10,767	1,971	0.48	0.23	2,364	42,861		
0	1	0.04	12,688	2,844	0.38	0.35	3,427	18,308		
-13	-8	0.00	15,669	4,238	0.28	0.52	5,433	-16,261		

³³Page number of the participant's DFBS where the factor is located.

INCOME AND EXPENSE PROFILES

Use the following two tables to make an income and expense profile for your dairy farm business. The figures in the quintile columns represent the average of the top 20 percent to the bottom 20 percent for each receipt and expenditure category. Each line is computed independently. The farms that comprise the top 20 percent in milk sales do not necessarily make up the top 20 percent of any other category. On each line circle the income and cost measures closest to the one for your farm. Then draw a vertical line connecting your circles on each table. The strongest profile will be a relatively straight line on the left side of the table.

RECEIPTS AND EXPENSES PER COW

28 Intensive Grazing Dairy Farms, 2011

Item	QUINTILE				
	1	2	3	4	5
<u>Accrual Operating Receipts</u>					
Milk	\$4,564	\$4,370	\$3,791	\$3,321	\$2,404
Dairy cattle	562	377	247	136	53
Dairy calves	80	56	43	14	-27
Other livestock	161	39	6	0	-17
Crops	575	188	61	13	-79
Miscellaneous receipts	655	240	106	57	20
Total Operating Receipts	\$5,378	\$4,871	\$4,643	\$3,920	\$2,930
<u>Accrual Operating Expenses</u>					
Hired labor	\$15	\$120	\$166	\$286	\$513
Dairy grain & concentrate	581	938	1,152	1,330	1,435
Dairy roughage	0	5	48	177	636
Nondairy feed	0	0	0	0	13
Professional nutritional services	0	0	0	0	0
Machinery hire/rent/lease	0	15	57	110	248
Mach. repair & farm vehicle exp.	93	136	176	230	475
Fuel, oil & grease	56	116	154	199	272
Replacement livestock	0	0	0	6	167
Breeding	10	34	52	65	101
Veterinary & medicine	37	52	83	122	171
Milk marketing	95	147	181	217	287
Bedding	0	12	37	54	98
Milking supplies	27	48	78	100	136
Cattle lease	0	0	0	0	33
Custom boarding	0	0	0	8	104
bST expense	0	0	0	0	34
Livestock professional fees	0	10	27	33	51
Other livestock expense	0	7	33	69	114
Fertilizer & lime	10	63	105	150	234
Seeds & plants	2	17	43	65	102
Spray/other crop expenses	0	1	25	42	109
Crop professional fees	0	0	0	5	52
Land, building, fence repair	5	30	52	89	228
Taxes	26	63	91	128	199
Real estate rent/lease	0	7	30	59	178
Insurance	20	37	45	64	114
Utilities	40	70	96	130	249
Interest	0	31	88	137	274
Other professional fees	0	1	7	13	24
Miscellaneous	2	9	19	29	70
Total Operating Expenses	\$2,250	\$2,763	\$3,363	\$3,640	\$3,940
Expansion livestock	0	0	0	0	39
Extraordinary expense	0	0	0	0	0
Machinery depreciation	82	142	201	350	586
Building depreciation	0	16	80	130	230
Net Farm Income w/o Appreciation	\$1,445	\$1,136	\$858	\$546	\$149

RECEIPTS AND EXPENSES PER CWT. OF MILK SOLD
28 Intensive Grazing Dairy Farms, 2011

Item	QUINTILE				
	1	2	3	4	5
<u>Accrual Operating Receipts</u>					
Milk	\$23.85	\$22.37	\$21.47	\$21.08	\$20.47
Dairy cattle	4.05	2.36	1.43	0.88	0.26
Dairy calves	0.57	0.29	0.22	0.10	-0.16
Other livestock	1.35	0.21	0.03	0.00	-0.13
Crops	3.42	1.27	0.36	0.08	-0.42
Miscellaneous receipts	3.78	1.69	0.70	0.35	0.12
Total Operating Receipts	\$30.93	\$27.55	\$25.92	\$24.04	\$22.49
<u>Accrual Operating Expenses</u>					
Hired labor	\$0.08	\$0.63	\$0.90	\$1.83	\$3.54
Dairy grain & concentrate	4.26	5.89	6.54	7.35	8.87
Dairy roughage	0.00	0.03	0.41	1.05	3.74
Nondairy feed	0.00	0.00	0.00	0.00	0.08
Professional nutritional services	0.00	0.00	0.00	0.00	0.00
Machinery hire/rent/lease	0.00	0.09	0.39	0.77	1.40
Mach. repair & farm vehicle exp.	0.57	0.87	1.11	1.43	2.80
Fuel, oil & grease	0.37	0.68	0.91	1.16	1.91
Replacement livestock	0.00	0.00	0.00	0.03	0.83
Breeding	0.07	0.22	0.31	0.35	0.56
Veterinary & medicine	0.24	0.37	0.53	0.62	0.96
Milk marketing	0.71	0.92	1.09	1.32	1.45
Bedding	0.00	0.09	0.22	0.27	0.53
Milking supplies	0.17	0.32	0.47	0.58	0.76
Cattle lease	0.00	0.00	0.00	0.00	0.21
Custom boarding	0.00	0.00	0.00	0.04	0.99
bST expense	0.00	0.00	0.00	0.00	0.17
Livestock professional fees	0.00	0.06	0.15	0.18	0.35
Other livestock expense	0.00	0.05	0.20	0.43	0.92
Fertilizer & lime	0.05	0.41	0.62	0.87	1.40
Seeds & plants	0.01	0.10	0.24	0.34	0.59
Spray/other crop expenses	0.00	0.01	0.14	0.25	0.63
Crop professional fees	0.00	0.00	0.00	0.03	0.29
Land, building, fence repair	0.03	0.21	0.31	0.51	1.21
Taxes	0.15	0.38	0.53	0.73	1.52
Real estate rent/lease	0.00	0.04	0.18	0.36	1.09
Insurance	0.12	0.22	0.29	0.39	0.71
Utilities	0.27	0.40	0.55	0.82	1.60
Interest	0.00	0.17	0.54	0.99	2.17
Other professional fees	0.00	0.01	0.04	0.08	0.15
Miscellaneous	0.01	0.06	0.12	0.23	0.40
Total Operating Expenses	\$15.38	\$17.45	\$19.41	\$20.73	\$24.74
Expansion livestock	0.00	0.00	0.00	0.00	0.32
Extraordinary expense	0.00	0.00	0.00	0.00	0.00
Machinery depreciation	0.52	0.87	1.30	2.29	3.36
Building depreciation	0.00	0.09	0.50	0.90	1.27
Net Farm Income w/o Appreciation	\$8.11	\$6.28	\$5.04	\$3.42	\$0.56

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

30 New York Dairy Farms, 2011

<u>Animals Entering Herd</u>	<u>Average</u>
Number calving in 2011 for first time	284
Animals purchased, percent ³⁴	9.8%
Animals raised by farm, percent ³⁵	90.2%
 <u>Current Heifer Inventory</u>	
Raised on dairy, percent	81.1%
Raised by a custom grower, percent	18.9%

³⁴Animals purchased are animals purchased from a different farm and were not the farm's genetics.

³⁵Animals 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, 284 animals calved for the first time in 2011. The breakdown on the source of these animals was 9.8 percent purchased and 90.2 percent raised on the farm. Of the current heifer inventory, 81.1 percent were raised on the dairy and 18.9 percent were 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, 9 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 table. The table is divided into five 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 are included in market premiums. The fourth area looks at the expenses associated with marketing milk. The 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 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 five areas is the net price received on farms. Your net farm price can be found on page 12 of your farm's DFBS report.

The table on page 44 reports the averages for these 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.

AVERAGE³⁶ MILK INCOME AND MARKETING REPORT
9 Intensive Grazing Dairy Farms, 2011

	Pounds	Percent	Price/Pound	Total	\$/Cwt of Milk
BASE FARM PRICE					
Butterfat	85,738	4.06	\$ 2.00	\$171,787	\$ 8.14
Protein	68,303	3.24	\$ 2.76	\$188,746	\$ 8.95
Solids	117,084	5.55	\$ 0.32	\$ 37,721	\$ 1.79
Total Component Contribution					\$18.88
PPD	2,109,330			\$ 29,928	\$ 1.42
Base Farm Price					\$20.30
Premiums					
Quality				\$ 1,616	\$ 0.08
Volume				\$ 6,008	\$ 0.28
Market Premiums				\$ 39,549	\$ 1.87
Total Premiums					\$ 2.23
BASE FARM PRICE + PREMIUM					\$22.53
Deductions					
Promotion				\$ 3,191	\$ 0.15
Hauling + Stop Charges				\$14,340	\$ 0.68
Market Fees & Coop Dues				\$ 2,816	\$ 0.13
Total Deductions					\$ 0.96
BASE FARM PRICE + PREMIUMS - DEDUCTIONS					\$21.57
Marketing Programs					
Futures Contracts, Forward Contracting, Etc.				\$ 0.00	\$ 0.00
Total Marketing Income					\$ 0.00
Patronage Dividends				\$ 2,335	\$ 0.11
NET PRICE RECEIVED ON FARM, ALL SOURCES					\$21.68
PPD - Hauling, \$ per cwt.					\$ 0.74
PPD - Hauling + Market Premiums, \$ per cwt.					\$ 2.61
Net Marketing Value (PPD + Total Premiums – Total Deductions), \$ per cwt.					\$ 2.69

³⁶Each 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.

IDENTIFY AND SET GOALS

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

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

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

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

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

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

Worksheet for Setting Goals

I. Mission and Objectives

Worksheet for Setting Goals (Continued)

II. Goals

What	How	When	Who is Responsible
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
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_____	_____	_____	_____
_____	_____	_____	_____

Summarize Your Business Performance

The Farm Business Chart on page 40 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 19)

Accrual Receipts - (defined on page 19)

Annual Cash Flow Statement - (defined on page 27)

Appreciation - (defined on page 20)

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.

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 28)

Cash Paid - (defined on page 17)

Cash Receipts - (defined on page 19)

Change in Accounts Payable - (defined on page 18)

Change in Accounts Receivable - (defined on page 19)

Change in Inventory - (defined on page 19)

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 33)

Current Portion - (defined on page 23)

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 28)

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

Debt to Asset Ratios - (defined on page 25)

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 28.

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 22)

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 25)

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

Net Farm Income - (defined on page 20)

Net Farm Income from Operations Ratio – (defined on page 23)

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

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

Operating Costs of Producing Milk - (defined on page 34)

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

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.

Owner/Operator Resources/cwt. - The total value of equity, management, and labor contributed to the farm from all owner/operators. This measure is calculated by adding the interest on equity capital to the value of labor and management for all owner/operators and dividing by the hundredweight produced during the year.

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 34)

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 23)

Return on Total Capital - (defined on page 23)

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

Stocking Rate - (defined on page 32)

Total Costs of Producing Milk - (defined on page 34)

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 \$2,500 per month plus the value of operator(s) labor at \$2,500 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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