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Financial Characteristics of North Dakota Farms 2003-2004

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Abstract

The performance of over 500 North Dakota farms, 2003-2004, is summarized using 16 financial measures. Farms are categorized by geographic region, farm type, farm size, gross cash sales, farm tenure, net farm income, debt-to-asset, and age of farmer to analyze relationships between financial performance and farm characteristics. Five year averages, 1999-2003, and farm financial trends for the 1995-2004 period are also presented.

Year-to-year changes in median net farm income averaged nearly 40 percent from 1995 to 2004. Median net farm income fell slightly in 2004 to \$44,912, after reaching a 10-year high, \$49,181 in 2003. Financial performance was lowest in 1997 and 1998 when over one-half of farms could not make scheduled term debt payments. In 1999, 2000, 2003, and 2004 the rate of return on equity exceeded the rate of return on assets, which indicates that debt capital was employed profitably. The interest expense as a percent of gross revenue was 5.6 in 2003 and 2004, the lowest in the past 10 years. It had improved six consecutive years.

From 1995 to 2004 the Red River Valley has had stronger profitability, solvency and repayment capacity measures than other regions. Crop farms from 1995-2004 have been larger, as measured by gross sales, and have had better solvency and profitability than livestock farms. Farms with sales less than \$100,000 were twice as likely to have debt-to-asset higher than 70 percent than were farms with sales greater than \$250,000. Farms that own some crop land, but less than 40 percent and are more likely to be crop farms, farm more acreage, and have larger sales, are typically the most profitable.

Keywords: Farm financial management, farm management, farm income, liquidity, solvency, profitability, repayment capacity, financial efficiency, financial benchmarks, tenure, North Dakota.

INTRODUCTION

Financial statements such as the balance sheet and income statement provide a structured format to summarize financial information so it is more manageable for decision making. It is helpful to further simplify or summarize information contained in financial statements into key measures of financial performance. However, the calculation of a financial measure can be fruitless unless there is a meaningful basis of comparison to evaluate the number. Two methods of comparison are:

- ❶ **Past performance.** The progress of a business can be monitored by constructing financial measures on a periodic basis and comparing present to past performance.
- ❷ **Industry benchmarks.** The average or median of a financial measure from several similar businesses provides a good point of reference. Currently there is no nationwide database of farm records. However, there are statewide farm record programs in some states, including North Dakota. Each farm has its own unique aspects, so the most appropriate comparison would be farms that have similar enterprises and resources.

Whatever method of comparison is used, it is imperative that the procedures for construction of financial statements and performance measures are consistent over time and between farms to ensure an "apples-to-apples" comparison.

The Farm Financial Standards Task Force (FFSTF) was formed by the American Bankers Association in 1989 to develop standards for construction of financial statements and measures of financial performance in agriculture. In 1991, the task force provided recommendations for financial statement construction and the calculation of 16 measures of financial performance. These recommendations were adopted, in most part, by the North Dakota Farm Business Management Education Program and are the basis for the benchmarks presented in this publication.

The purpose of this study is to provide information to producers, lenders, educators, and others on the financial performance of a sample of North Dakota farms. Table 1 lists the median

operator age, farm size and selected financial factors, 1995-2004. The data are from financial summaries of farms participating in the North Dakota Farm Business Management Education program. In this study the median and upper and lower quartiles of 16 financial performance measures are presented for all farms in the data set and for groupings of farms by characteristic such as farm type, farm size, and age of producer. The results can be used by producers and lenders to evaluate the financial performance of a farm. Also, trends can be identified and relationships between farm characteristics and financial measures can be analyzed. However, because of the small number of farms in this study, the results should be used cautiously and only be considered guidelines.

SOURCE OF DATA

About 700 farms are enrolled in the North Dakota Farm Business Management Education program. Instructors educate and assist producers in record keeping and review data for completeness and accuracy. Instructors use the Finpack farm financial management software program to generate financial summaries. From 1995-2004, the financial summaries of over 500 farms each year were considered usable for this study.

About 85 percent of the same farms are in the study from one year to the next. Annual turnover occurs from changes in farm management program enrollment and the level of farms completing their records by a cutoff date.

The farms in this study are larger and the age of the farm operators younger than the state average. In 2004, there were 30,300 farms in North Dakota with gross agricultural sales of at least \$1,000. Only 9,800, or 32%, had gross receipts greater than \$100,000, whereas 89% of the 522 farms in this study exceed that sales volume (median gross sales was \$265,529). The farms in the study are more representative of operations that provide the primary source of net family income. The average age of farm operators in this study is 44 compared to 54 for the state average.

INTERPRETATION OF RESULTS

Each financial measure was calculated for each farm. Refer to Appendix A for definitions of the financial measures. An explanation of asset valuation and accrual adjustments is also presented.

Farms were grouped by characteristics such as region, type of farm, and size and were sorted in order from strongest to weakest by each of the 16 financial measures. The **median** is the midpoint value of the financial measure: one-half of the farms in the category had a higher value and one-half had a lower value than the median. The **upper quartile** is the value that was exceeded by one-fourth of the farms, and the **lower quartile** is the value that was exceeded by three-fourths of the farms. (Another definition of lower quartile is the value for which one-quarter of the farms in the category had a weaker value.)

Individual farm operators and lenders can use this study for benchmarks of comparison if their financial measures are calculated similarly. For example, a farm operator 30 years of age may compare his/her profitability and financial efficiency with those of other young operators. Or a lender may compare the solvency and repayment capacity of producers who rent all their crop land. This study also can be used to look at relationships and trends. What is the relationship between age of farmer and rate of return on equity? How has operating profit margin of livestock farms changed over time?

One ratio is not sufficient to make conclusions about the overall financial performance of a farm business. For example, a crop farm may have a debt-to-asset ratio of 60%, which is worse than the median value of 51.8% (shown on Table 7) for the crop farm enterprise category. However, other factors such as profitability, total assets, and age of operator should also be considered.

Also, a farm can be adversely affected by extraordinary circumstances. Profitability in the low quartile may not be reflective of management capability if the farm had localized bad weather that was not experienced by many other producers in the farm category.

Caution must be used when analyzing the tables because a small number of farms increases the possibility that results may not be representative of a farm category. In this study, for 2004, there are only 56 farms with negative net farm income, 59 farms with sales less than \$100,000, 77 mixed livestock-crop enterprise farms, and 89 and 86 farms in the Red River Valley and west regions, respectively. Performance of the Red River Valley region may not be representative of the central or northern areas of the Red River Valley because nearly all valley farms in the study are from the south. Also, in 2003 and 2004, there was a lack of farms in the northern portion of the west region.

There are some strong correlations between two or more classifications, so it is difficult to associate a financial measure with an individual farm characteristic.

For example, the profitability of livestock, in comparison to crop farming, is reflected in farm categories that had a disproportionate number of livestock farms, such as the west region, farms with greater than 40% crop land ownership, and farms with less than \$100,000 sales. Also, comparison of farms by enterprise type, farm size and gross sales can be affected by regional performance. The Red River Valley has the highest proportion, relative to other regions, of crop farms, farms of less than 1,600 acres, and farms with gross income greater than \$250,000.

Table 1 shows the 10 year trends in financial performance and farm characteristics. Table 2 lists the farm characteristics and percentage distribution for 2004 and the breakout of these characteristics by region of North Dakota. Tables 3 through 11 display the median and quartiles of 16 financial measures by farm characteristics. Figures 1 through 16 display relationships between selected farm characteristics and financial measures. A summary of highlights by farm characteristics is also presented.

TABLE 1. MEDIAN FARM SIZE, FARM OPERATOR AGE, AND FINANCIAL FACTORS OF FARMS PARTICIPATING IN THE NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 1995-2004.

	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995
Number of Farms	522	513	513	532	553	539	535	560	551	596
-----Median-----										
Age of Operator	46	45	44	44	44	43	42	42	41	41
Farm Size (acres)	2,002	1,995	2,033	1,937	1,916	1,921	1,882	1,729	1,601	1,576
Gross Cash Revenue	265,524	247,757	220,781	216,697	205,659	190,676	173,972	179,052	177,152	165,134
Total Farm Assets	652,575	612,437	575,606	543,860	549,636	520,094	499,496	485,094	469,587	438,289
Total Farm Liabilities	323,805	305,268	284,828	287,068	274,640	266,401	270,802	263,406	251,480	225,793
Current Ratio	1.3	1.4	1.3	1.2	1.4	1.4	1.2	1.2	1.2	1.3
Working Capital	35,264	39,712	29,099	21,910	36,612	29,643	12,095	11,207	19,042	18,984
Debt-to-asset (%)	54.3	54.3	53.3	55.5	53.9	55.5	59.4	58.6	55.6	51.5
Rate of Return on Farm Assets (%)	6.1	7.0	5.7	4.1	7.6	8.4	4.0	2.5	6.5	4.7
Rate of Return on Farm Equity (%)	6.7	8.4	4.4	3.2	7.7	9.0	0.0	-1.4	4.9	2.2
Operating Profit Margin (%)	15.1	17.4	14.5	12.1	20.6	21.6	11.5	8.3	17.3	14.5
Net Farm Income	44,912	49,181	38,079	27,729	45,085	42,009	19,491	14,290	31,063	23,463
Term Debt Coverage Ratio	1.5	1.6	1.3	1.0	1.6	1.5	0.9	0.7	1.2	1.1
Term Debt & Capital Repayment Margin (\$)	18,752	21,012	10,628	301	17,768	17,973	-2,680	-8,995	5,024	1,652
Asset Turnover Ratio	0.40	0.42	0.37	0.38	0.42	0.38	0.36	0.34	0.39	0.36
Operating Expense Ratio (%)	69.2	66.8	68.8	70.9	63.3	61.2	71.9	73.3	66.0	67.4
Depreciation Expense Ratio (%)	6.0	5.9	5.6	5.9	5.3	5.7	5.7	6.0	5.6	5.7
Interest Expense Ratio (%)	5.6	5.6	6.6	7.6	7.8	8.4	9.6	9.9	8.9	8.8
Net Farm Income Ratio (%)	18.6	19.6	17.3	14.0	21.7	22.4	12.7	8.1	18.0	16.2

FARM CLASSIFICATION AND HIGHLIGHTS

ALL FARMS

Highlights

- Some consistent trends over the past ten years, 1995-2004, for farms enrolled in the North Dakota Farm Business Management Education Program are:
 - farms are getting larger; median acreage increased 27% to 2,002 acres, median gross revenue increased 61% and median farm assets and liabilities increased 49% and 43% to \$652,575 and \$323,805, respectively.
 - farmers are getting older; the median age increased from 41 to 46.
 - off-farm wages and salaries per farm household nearly doubled.
- Overall financial performance in 2004 was strong, but down slightly compared to 2003. Median net farm income of \$44,912 was the third highest in the past ten years. Higher costs and very low soybean, corn, sunflower and drybean yields, were offset by crop insurance and very high spring wheat, canola and field pea yields. Also, beef cow-calf profit was the best since 1990 and flax prices were very strong.
- Financial performance, 1995-2004, was poorest in 1997 followed by 1998 and 1995 because of low cattle prices, weather related production problems with small grains in 1995 and 1997, low crop prices in 1998 and increasing production costs. Financial performance was strong in 2000 and 1999, despite very low crop prices, because of extraordinary government and crop insurance payments and higher beef prices. Also, yields and acreage of corn, soybeans and sugarbeets were at record levels.
- Profit declined in 2001 because of lower government subsidies and higher crop production costs with continued low commodity prices. Conversely, 2002 had lower production costs, high prices and a 37% increase in profit. Median net farm income reached a 10-year high in 2003 at \$49,181. A good wheat and barley crop, strong crop prices and livestock profit, and disaster aid legislated in 2003, for crop losses that occurred in 2001 and 2002, all contributed.
- Median current ratio has been relatively stable, ranging between 1.2 to 1.4 from 1995 to 2005. The median debt-to-asset ratio was 54.3 in 2003 and 2004 compared to 53.3 in 2002. Solvency deteriorated each year from 46.4% in 1993 to 59.4% in 1998, before improving in 1999 and 2000.
- Median rates of return on equity and assets were 6.7% and 6.1%, respectively, in 2004. In the 1995-2004 period, the other years that ROE exceeded ROA, which indicated that debt capital was employed profitably, were 1999, 2000 and 2003.
- Median term debt coverage ratio was 1.5 in 2004 compared to the ten year high of 1.6 in 2003. Only in 1997 and 1998 was median term debt coverage ratio below 1.0, which indicates over one-half of the farms were not able to make all scheduled term debt payments with farm and non-farm income.
- The 5.6% interest expense as a percent of gross revenue for 2003 and 2004 is the lowest in the 1995-2004 period. It had declined six consecutive years because of lower interest rates and higher gross.
- Median net farm income as a percent of gross revenue was 18.6% in 2004 and 19.6% in 2003. In the 1994-2003 period it was the highest, 22.4%, in 1999 and lowest, 8.1%, in 1997.

TABLE 2. FARM CLASSIFICATIONS AND PERCENT DISTRIBUTION OF FARM TYPES WITHIN REGIONS, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 2004.

Farm Group Category	Number of Farms (522)	Percentage	Farm Group Category Breakout by Region			
			Red River Valley	North Central	South Central	West
Region			89	192	155	86
Red River Valley	89	17.0				
North Central	192	36.8				
South Central	155	29.7				
West	86	16.5				
Farm Enterprise			-----percentage-----			
Crop	334	64.0	97.8	75.5	53.5	22.1
Livestock	111	21.3	1.1	16.1	22.6	51.2
Mixed	77	14.8	1.1	8.3	23.9	26.7
Farm Sales						
\$99,999 or less	59	11.3	2.2	12.5	12.9	15.1
\$100,000 - \$249,999	180	34.5	24.7	33.9	38.7	38.4
\$250,000 or over	283	54.2	73.0	53.6	48.4	46.5
Farm Size						
1,600 acres or less	196	37.5	58.4	29.2	41.9	26.7
1,600 acres or over	326	62.5	41.6	70.8	58.1	73.3
Cropland Tenure						
Full tenant	98	18.8	19.1	16.8	18.8	24.1
1-20 percent owned	118	22.6	33.7	24.6	18.8	14.5
21-40 percent owned	131	25.1	31.5	25.7	22.1	24.1
41 percent or over owned	170	32.6	15.7	33.0	40.3	37.3
Farm Income						
Negative	56	10.7	5.6	9.4	16.1	9.3
\$0 - \$24,999	103	19.7	10.1	24.5	17.4	23.3
\$25,000 - \$49,999	115	22.0	18.0	21.9	26.5	18.6
\$50,000 or more	248	47.5	66.3	44.3	40.0	48.8
Debt-to-asset Ratio						
0 - 40 percent	159	30.5	34.8	29.2	32.9	24.4
41 - 70 percent	219	42.0	48.3	44.3	38.1	37.2
71 percent or more	144	27.6	16.9	26.6	29.0	38.4
Farmer Age						
34 years or younger	94	18.0	16.9	18.2	16.8	20.9
35 - 44 years	142	27.2	30.3	26.6	27.1	25.6
45 years or older	286	54.8	52.8	55.2	56.1	53.5

REGION

Farms are classified in one of four geographic regions in North Dakota, based on the location of their Farm Business Management program. However, farms enrolled in the Bismarck program are classified as "west or "south central" according to which side of the Missouri River the farm is located. Also, some farms that are enrolled in the Casselton and Wahpeton programs are not in the Red River Valley and are classified as south-central. The southern area of the "west" region is better represented than the northern area. The northern area of the Red River Valley has had no representation since 1997. Locations of North Dakota Farm Business Management programs that participated in the 2004 summaries are:

Red River Valley: Wahpeton and Casselton

North Central: Bottineau, Devils Lake, Minot, and Rugby

South Central: Bismarck, Carrington, Jamestown, and Napoleon

West: Bismarck, Dickinson, and Glen Ullin

Highlights

- In 2004 the median farm size increased from the Red River Valley (1,493 acres, all crop land) to the west region (2,706 acres, including pasture). Median farm size was 2,133 acres (1,812 crop acres) in the north central region and 1,878 acres (1,276 crop acres) for the south central region .
- Several farm characteristics are strongly related to region. Red River Valley farms are more likely to be crop farms and typically have smaller total acreage (crop land and pasture) and percent of crop land owned, but much larger total farm sales, assets and liabilities, than farms in other regions.
- In 2004, the incidence of livestock and mixed enterprise farms goes from a mere 2% in the Red River Valley to 79% in the west.
- The Red River Valley, as typical, had stronger profitability, solvency and repayment capacity measures in 2004 than other regions.
- The west region improved all financial measures in 2004, except for liquidity, whereas other regions experienced a decline in nearly all financial measures.
- Median current ratio for 2004 and the five year average, 1999-2003, were the same, 1.3, for the west and the Red River Valley, and 1.4 for the central regions.
- The five year average, 1999-2003, median rate of return on equity was 12.7% in the Red River Valley and 4.2% in the west. However, in 2004 it was similar in these regions, about 9.3%, compared to 5.0% in the north central and 5.6% in the south central region.
- Median net farm income in 2004 ranged from 85,276 in the Red River Valley to \$38,218 in the south central region. The \$48,605 of the west region was its highest in the 1995-2004 period.
- The five year average, 1999-2003, median term debt coverage ratio was 1.8 for the Red River Valley, 1.3 for the west and north central and 1.4 for the south central region. In 2004 it was highest, 1.7, in the west region.

FARM ENTERPRISE

Farms were classified as "crop" if 70% or more of total sales were from crops, and "livestock" if livestock sales accounted for 70% or more of total sales. The remaining farms were classified as "mixed."

Highlights

- In 2004, 64% of farms were classified as crop, 21.3% as livestock and 14.8% were mixed enterprise farms.
- One-half of the west region farms were classified as livestock in 2004, compared to 1% in the Red River Valley, and 16 and 22% in the north central and south central regions, respectively.
- In the 1995-2004 period crop farms have had more total assets and liabilities and greater gross and net income than livestock and mixed enterprise farms. Profitability of livestock farms was similar to crop farms only in 1997 and 2001. Profitability of livestock and mixed farms was extremely weak in 1995-1998. In 1997 the performance of crop farms was also very poor.
- In 2004, median net farm income for crop farms decreased 26%, to \$52,414, for crop farms, but increased 40%, to \$35,376, for livestock farms and 31%, to \$40,710, for mixed enterprise farms.
- Every year, 1995-2004, crop farms had better solvency than other farm types. In 2004, median debt-to-asset was 51.8% for crop farms and about 58% for livestock and mixed enterprise farms.
- The median asset turnover ratio in 2004 was 0.47 for crop farms, 0.34 for mixed enterprise farms and 0.29 for livestock farms in 2004. A higher ratio for crop farms is typical. Most livestock farms are beef cow-calf operations.
- It was unusual in 2004 that livestock farms had the highest median term debt coverage ratio, 1.7. The five year average, 1999-2003, median term debt coverage ratio was 1.6 for crop farms and 1.2 for livestock farms.
- Every year 1995-2004, crop farms had lower interest expense as a percent of gross revenue than other farm types. In 2004 it held at 4.7% for crop farms and declined to 7.5% for livestock farms.
- In 2004, livestock farms showed the best performance in converting gross income into net income, 21%, because median operating expenses (all expenses except depreciation and interest) were only 59.3% of gross, compared to 71.7% for crop farms.
- Financial efficiency, as measured by net farm income relative to gross, has historically been slightly better for crop farms than livestock farms. The advantage livestock farms typically have in operating expense as a percent of gross has been more than offset by higher depreciation and interest expenses as a percent of gross.

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Figure 1. Median Total Farm Assets and Liabilities by Farm Type, 2004, N.D. Farm Mgt Program



Figure 2. Median Net Farm Income by Farm Type, 1995-2004, N.D. Farm Mgt Program

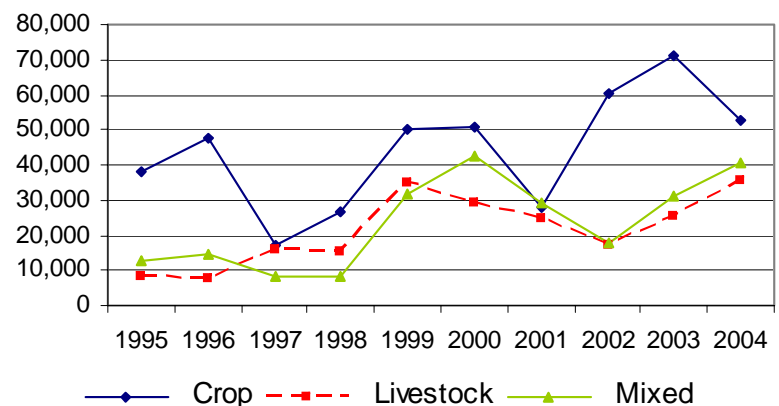


Figure 3. Median Rate of Return on Assets by Farm Type, 1995-2004, N.D. Farm Mgt Program

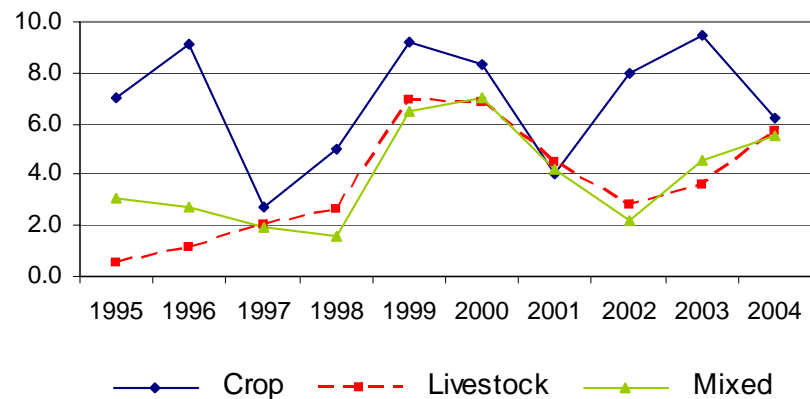
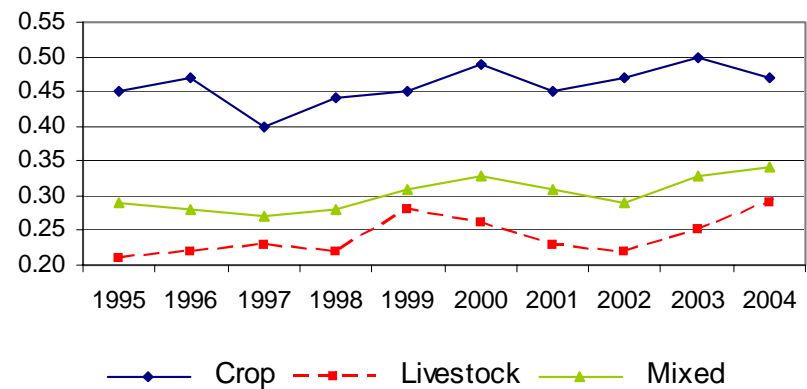


Figure 4. Median Asset Turnover Ratio by Farm Type, 1995-2004, N.D. Farm Mgt Program



FARM SALES

Farms were classified in one of three cash farm sales categories. Farm sales include cash receipts from crop and livestock sales, government payments, and other farm income.

The categories were: less than \$100,000
 \$100,000 to \$249,999
 \$250,000 or over

Highlights

- Median farm sales were \$265,529 in 2004. The percentage of farms with over \$250,000 of sales has doubled, to 54%, over the past 10 years.
- Gross sales are correlated to region and farm type. In 2004, three-fourths of Red River Valley farms had sales in excess of \$250,000, compared to about one-half in other regions. Also, 67% of crop farms had sales in excess of \$250,000 compared to only 28% of livestock farms.
- As expected, young farmers typically have lower sales than older farmers. However, farmers between the ages of 35 and 44 are as likely to have farm sales greater than \$250,000 than farmers 45 years and older.
- A strong relationship between gross sales and financial performance is typical. Every year, 1995-2004, median rates of return on assets and equity increased with sales volume.
- Historically, there has not been a clear relationship between farm sales and current ratio. In 2004, it was 1.4, 1.3, and 1.4 for the small, medium, and large sale categories, respectively.
- Farms with low sales typically have higher debt-to-asset. The five-year average, 1999-2003, median debt-to-asset was 61.9%, 56.7% and 50.4% for low, medium and high farm sale groups, respectively.
- Farms with sales less than \$100,000 improved all financial measures, except liquidity, in 2004. This is associated with the improved performance of livestock farms which represent over one-half the farms with less than \$100,000 sales. Mid and large sale farm groups experienced a decline in nearly all 16 financial measures compared to 2003.
- Typically, repayment capacity is directly related to amount of sales. However, in 2004, farms with less than \$100,000 sales had a similar median term debt coverage ratio as farms with greater than \$250,000 sales. Only in 1997 when farms had very poor profitability regardless of sales level, did farms with less than \$100,000 sales have the best repayment capacity.
- From 1995-2004, farms with sales under \$100,000 had the best operating expense as percent of gross revenue, but the worst interest expense ratio because of higher debt, and usually the worst depreciation expense ratio.

Figure 5. Median Total Farm Assets and Liabilities by Farm Sales, 2004, N.D. Farm Mgt Program

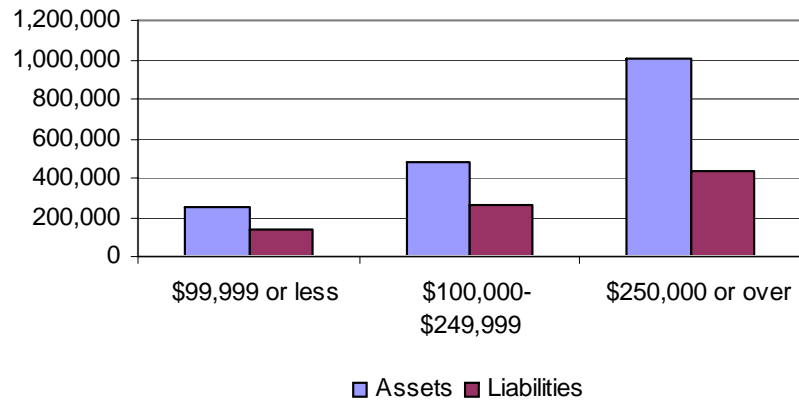


Figure 6. Median Net Farm Income by Farm Sales, 1995-2004, N.D. Farm Mgt Program

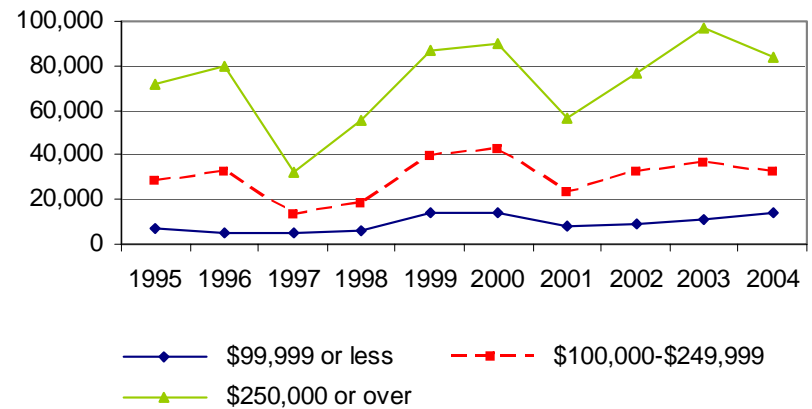


Figure 7. Median Term Debt Coverage Ratio by Farm Sales, 1995-2004, N.D. Farm Mgt Program

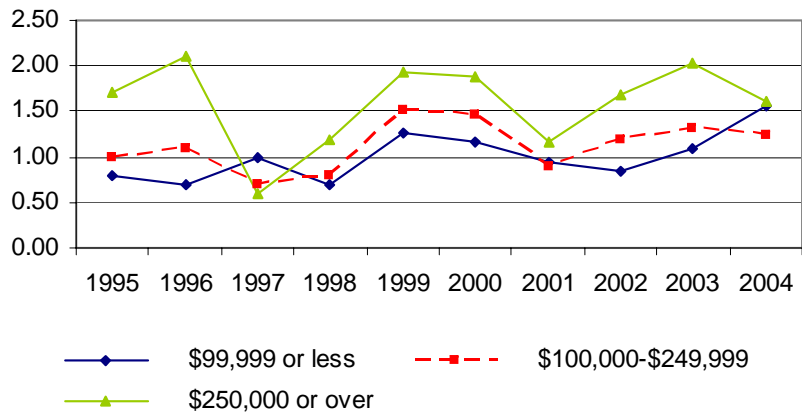
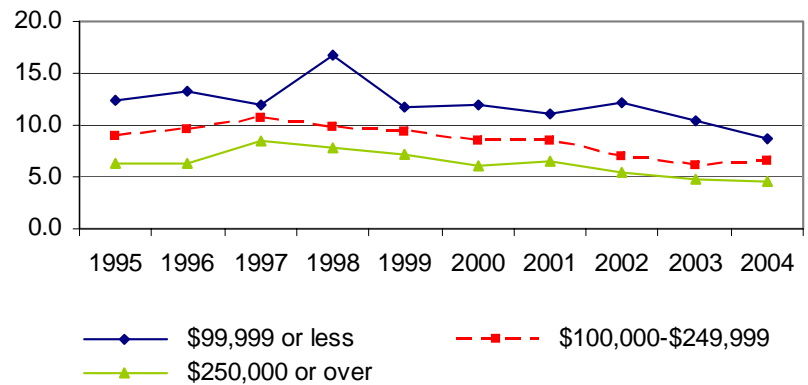


Figure 8. Median Interest Expense as a Percent of Gross Revenue, by Farm Sales, 1995-2004, N.D. Farm Mgt Program



FARM SIZE

Both crop and pasture acres were included in determining farm size.

Farm size categories were: 1,600 acres or less
 1,601 acres or more

Highlights

- Because of an increase in pasture land from east to west, median total farm acreage (crop land and pasture) ranged from 1,493 in the Red River Valley (all crop land) to 2,706 in the west region.
- From 1999 to 2004, mixed enterprise farms were slightly larger than crop or livestock farms.
- In 2004, two-thirds of farmers under 35 years old operated less than 1,600 acres. Compared to only one-fourth of farmers between 35 and 45 years old and one-third of farmers over 45 years.
- As expected, farms with greater than 1,600 acres have greater assets, liabilities, sales and profitability than smaller farms. Larger farms also have better solvency.
- In 2004, median net farm income was \$27,136 for farms with less than 1,600 acres and \$62,452 for farms with more than 1,600 acres. Historically, farms with more than 1,600 acres have over twice the net income of the small farm group.
- In 2004, and for the average of the previous five years, the median current ratio of the large farm group was slightly higher, 1.4, than for farms with less than 1,600 acres, 1.3.
- In 2004, median debt-to-asset was 59.1% for farms with less than 1,600 acres and 51.2% for larger farms.
- In 1999-2004, median term debt coverage ratio was better for farms with more than 1,600 acres than for smaller farms. However, it was slightly better for smaller farms in the four years 1995-1998. Although smaller acreage farms generate less cash income, they tend to have more non-farm income than larger farms.
- Financial efficiency measures of farm size groups tend to be similar. This indicates that greater profitability of farms larger than 1,600 acres is due to larger sales volume and/or greater operator labor efficiencies not lower operating expenses per dollar of sales.

CROPLAND TENURE

This is a classification of the portion of crop land that is rented. Four categories were used.

Full tenant
1-20 percent owned
21-40 percent owned
41 percent or over owned

Highlights:

- The incidence of farms renting all their crop land was similar across regions in 2004. However, high ownership of crop land is less likely in the Red River Valley. In 2004, farms west of the Red River Valley were twice as likely to own more than 40% of the crop land they operated.
- Crop land ownership increases with age. In 2004, farmers 45 years or older were over twice as likely to own more than 40% of their crop land than were farmers younger than 35 years. Four of ten young farmers rented all of their crop land, compared to one of ten farmers 45 years or older.
- Operators of livestock and mixed enterprise farms own a greater portion of their crop land than crop farms. One-half of livestock farms and over one-third of mixed enterprise farms own more than 40% of the crop land that they operate, compared to one-fourth of crop farms.
- Interestingly, small farms (less than 1,600 acres) were more likely to either own no crop land or to own more than 40% of crop land than were large farms (more than 1,600 acres).
- Farms that own some land, but not a lot, are typically the most profitable. Farms in the 1 to 20% crop land ownership category, followed by farms with 20-40% crop land ownership, are also most likely to be crop farms, farm more acreage, and have larger sales.
- During 1995 to 2004 there is no clear relationship between current ratio and land tenure except that farms with greater than 40% crop land ownership tend to have a slightly better median current ratio.
- Farms with greater than 40% crop land ownership typically had better solvency, 1995-2004, than other crop land ownership groups. In 2004, farms with no crop land ownership had a median debt-to-asset ratio of 58% compared to 49.4% for farms with crop land ownership greater than 40%.
- In 2004, median net farm income ranged from \$60,924 for farms with 21 to 40% crop land ownership to \$33,996 for farms that rent all crop land.
- The lower profit of farms with greater than 40% crop land ownership, compared to farms with 1 to 40% crop land ownership, is associated with the fact these farms are more likely to also be in livestock, low sales, and small size farm categories and less likely to be in the Red River Region.
- Farms with a smaller proportion of crop land ownership have fewer land assets and land interest costs and therefore have higher asset turnover ratios and lower interest expense ratios.

Figure 9. Median Net Farm Income by Crop Land Tenure, 1995-2004, N.D. Farm Mgt Program

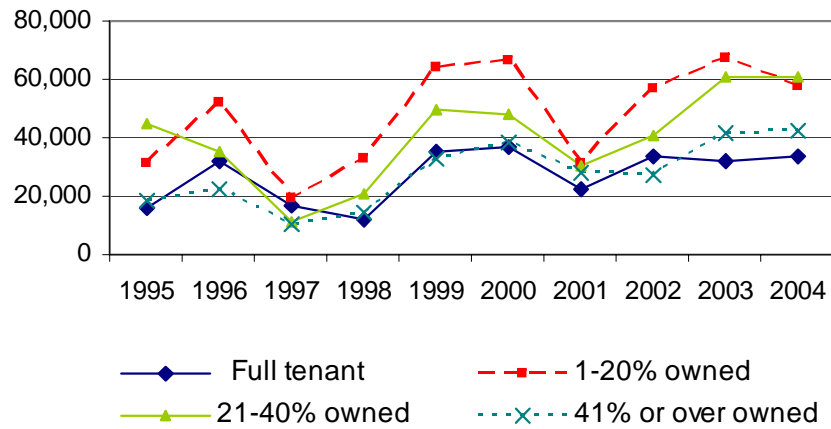


Figure 10. Median Asset Turnover Ratio by Crop Land Tenure, 1995-2004, N.D. Farm Mgt Program

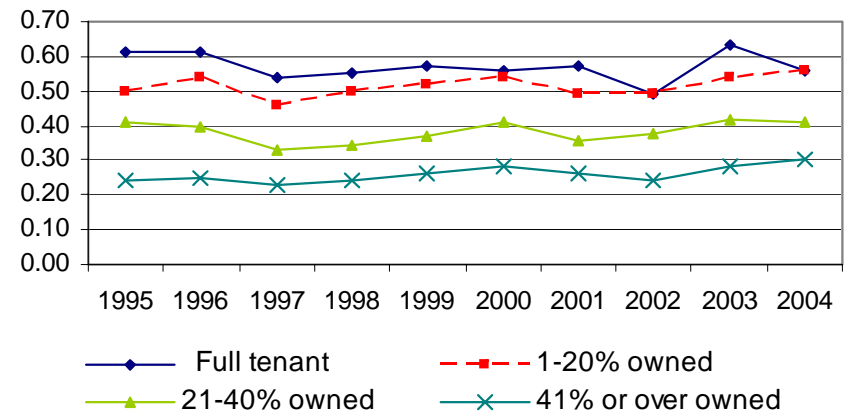


Figure 11. Median Net Farm Income by Debt-to-Asset Group, 1995-2004, N.D. Farm Mgt Program

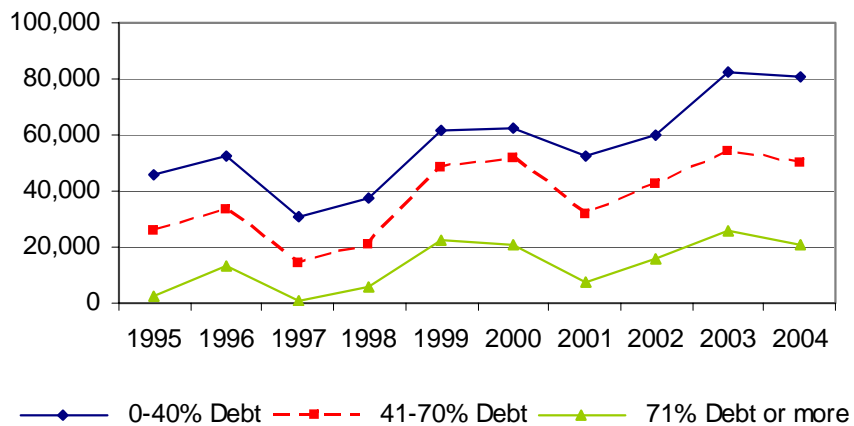
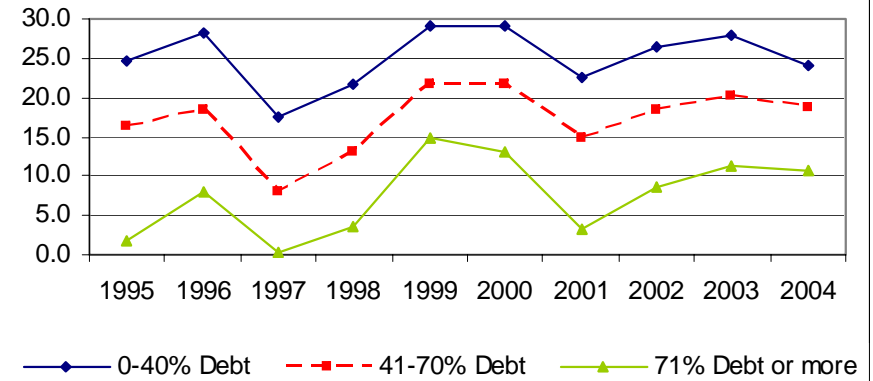


Figure 12. Median Net Farm Income as a Percent of Gross Revenue by Debt-to-Asset Group, 1995-2004, N.D. Farm Mgt Program



NET FARM INCOME

Four levels of net farm income were used to group farms.

Negative
\$0 - \$24,999
\$25,000 - \$49,999
\$50,000 or more

Highlights

- Farm profit is volatile. Year-to-year changes in median net farm income averaged nearly 40% over the past 10 years. Median net farm income fell a modest 8%, to \$44,912 after reaching a 10 year high, \$49,181, in 2003. The lowest median net farm income during this period was \$14,290 in 1997 and \$19,491 in 1998.
- The Red River Valley region had the highest median net farm income every year from 1995 to 2004, except for 1998.
- In 2004, median net farm income was \$52,414 for crop farms, \$40,710 for mixed enterprise farms and \$35,376 for livestock farms. Crop farms have been more profitable than livestock or mixed enterprise farms each year from 1995-2004, except for 2001. In 2001, net farm income was similar by farm type.
- The typical strong associations between net farm income and farm sales and farm size were greatly reduced in 1997.
- In 2004, 69% of farms with sales greater than \$250,000 had net farm income greater than \$50,000, and only 7% had negative net farm income. Four out of five farms with sales less than \$100,000 had net farm income less than \$25,000.
- In 2004, 60% of farms larger than 1,600 acres had net farm income greater than \$50,000, compared to 28% of smaller farms.
- Typically, in the 1995-2004 period, farmers 35 to 44 years old were more profitable than farmers that were younger or older. However, in 2001 older farmers had similar net farm income as farmers in the 35 to 44 age group and in 2002 the younger farmers had similar net farm income as the 35 to 44 age group.
- Solvency, liquidity, repayment capacity, and financial efficiency were strongly correlated with net farm income.
- In 2001, low debt farms (less than 40% debt-to-asset) were five times more likely to have net farm income in excess of \$50,000 than high debt farms (greater than 70% debt). In other years, 1996-2004, low debt farms were three to four times as likely to have net farm income greater than \$50,000.

DEBT-TO-ASSET RATIO

Three ranges of debt-to-asset ratio were used to group farms.

- 0 - 40 percent
- 41 - 70 percent
- 71 percent or more

Highlights

- Median debt-to-asset of 54.3% in 2004 and 2003 was worse than 53.3% in 2002 but better than 55.5% in 2001. Solvency had declined each year from 1994 to 1998 prior to improving in 1999 and 2000.
- Red River Valley farms, crop farms, large farms (greater than 1,600 acres) and farms with high sales (greater than \$250,000 sales) had lower median debt-to-asset than other regions, farm types, farm size and farm sales groups, respectively, during the years 1996-2004.
- There is a strong inverse relationship between level of debt and liquidity, repayment capacity, profitability and financial efficiency measures. As debt-to-asset increases, these measures deteriorate.
- In 2004, farms in the low debt category had the best median current ratio, 2.7, term debt coverage ratio, 2.8, interest as a percent of gross revenue, 2.9, and net farm income as percent of gross revenue, 24, compared to any of the 26 farm categories used in this study.
- Farms with sales less than \$100,000 are twice as likely to be in the high debt group compared to farms with sales greater than \$250,000.
- As expected, percent debt-to-asset tended to decrease as age of farmer increased.
- Median net farm income for the low, medium, and high debt-to-asset categories in 2004 was \$81,203, \$49,598 and \$21,121, respectively.
- In 2004, 70% of farms with low debt had net farm income greater than \$50,000 compared to only 19% of high debt farms.

FARMER AGE

Three groups were used to classify farms by age of operator:

34 years or less
35 - 44 years
45 years or older

Highlights

- In 2004, 18% of farm operators were under 35 years old and 27% were 35 to 44 years old. The percent of farmers 45 and older has steadily increased from 35% in 1995 to 55% in 2004.
- Prior to 1999, the age of farmers tended to increase slightly from east to west, but from 1999 to 2004 the age distribution of farm operators has been similar for all regions.
- Farmers in the middle age group typically had more total farm liabilities, higher gross sales, larger farms and were more profitable than the younger or older age groups. However, in 2001, net farm income was similar between the middle and older age groups and in 2002 it was similar between the middle and young age groups.
- Median total assets were greatest, 1994-2004, for farm operators 45 years and older and least for farmers under 35 years old. However, median total assets of the middle age group of farmers (35 to 44 years) is close to the asset level of the older farmer group.
- As expected, as the age of the farm operator increases there is a higher percent of crop land owned, and the percent of farm debt tends to decrease. In 2004, median debt-to-asset was 71% for farmers less than 35 years old, 56.7% for farmers in the 35 to 44 age group and 48.4% for farmers 45 or older.
- The five year average, 1999-2003, median current ratio was 1.4 for the younger farmers and 1.3 for the other age groups.
- In 2004, median net farm income increased to \$34,133 for farmers under 35 years, and \$57,126 for farmers 35 to 44 years old but decreased to \$44,279 for farmers 45 and older.
- In each year, 1995-2004, the young age group of farmers employed assets more efficiently than farmers 45 and older. The young group had better median measures of ROA, ROE, term debt repayment coverage ratio, asset turnover and net farm income as percent of gross revenue despite having much fewer total assets and higher debt-to-asset.

Figure 13. Median Total Farm Assets and Liabilities by Age of Farmer, 2004, N.D. Farm Mgt Program

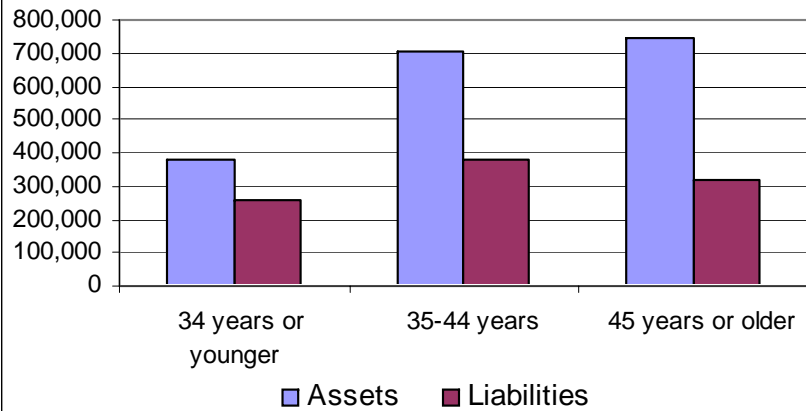


Figure 14. Median Net Farm Income by Age, 1995-2004, N.D. Farm Mgt Program

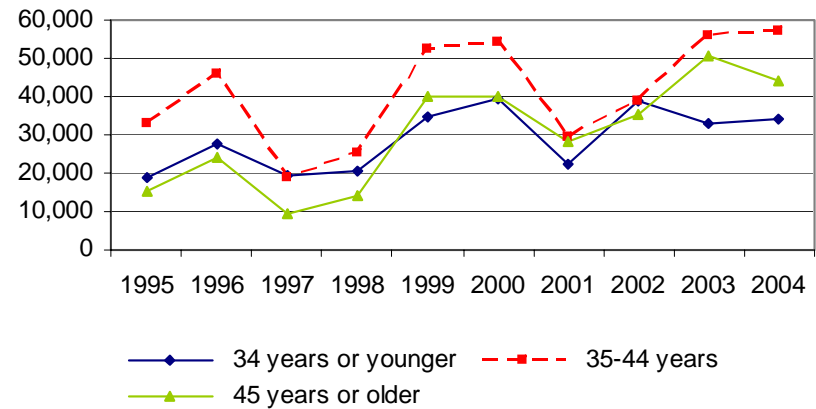


Figure 15. Median Term Debt Coverage Ratio by Farmer Age, 1995-2004, N.D. Farm Mgt Program

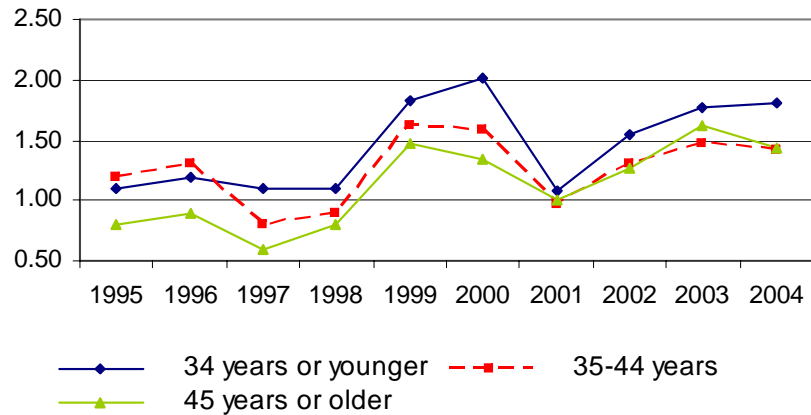


Figure 16. Median Net Farm Income as a Percent of Gross Revenue, by Farmer Age, 1995-2004, N.D. Farm Mgt Program

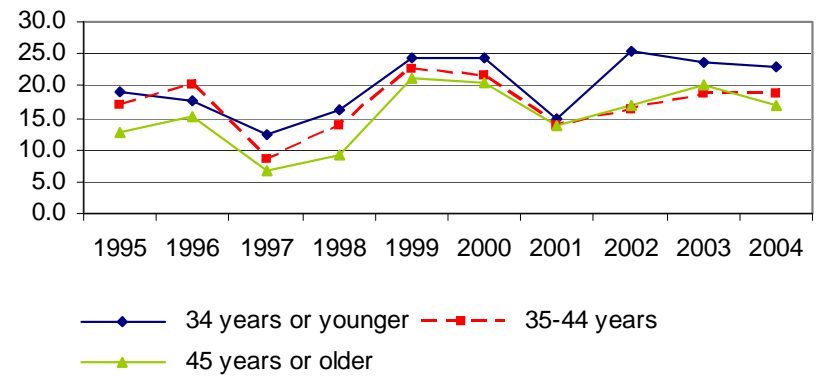


TABLE 3. CURRENT ASSETS AND CURRENT LIABILITIES, QUARTILE VALUES FOR 2004, MEDIAN VALUES FOR 2003, AND 5-YEAR AVERAGE, 1999-2003, OF MEDIAN VALUES, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM PARTICIPANTS

Farm Group	2004					2004				
	Upper Quartile	Lower Quartile	Median	2003 Median	Average of 1999-2003 Medians	Upper Quartile	Lower Quartile	Median	2003 Median	Average of 1999-2003 Medians
	Current Farm Assets (\$)					Current Farm Liabilities (\$)				
All Farms	305,633	94,473	177,357	163,272	141,004	58,324	193,738	118,309	99,997	92,384
Region										
Red River Valley	472,165	165,279	275,330	275,846	242,662	93,392	298,642	142,245	148,716	138,966
North Central	280,681	100,009	174,968	159,999	130,686	58,694	182,870	121,769	93,953	83,582
South Central	300,464	94,622	167,778	148,732	133,047	58,384	185,309	102,841	84,799	93,311
West	239,664	77,544	150,739	135,917	124,574	44,508	178,872	92,695	94,625	70,557
Farm Enterprise										
Crop	345,935	108,336	212,985	194,622	159,957	73,880	222,988	135,279	119,491	106,651
Livestock	198,345	62,505	110,112	95,528	96,131	31,303	114,371	64,639	61,774	60,451
Mixed	251,698	101,126	164,190	148,894	127,855	74,535	170,520	113,401	94,468	86,992
Farm Sales										
\$99,999 or less	69,542	25,525	40,688	43,100	43,786	15,092	55,486	26,885	33,885	33,285
\$100,000-\$249,999	169,360	80,397	106,962	126,557	116,985	58,115	125,027	92,723	77,680	79,781
\$250,000 or over	419,944	195,169	282,826	274,297	252,847	107,333	278,720	174,660	163,376	154,597
Farm Size										
1,600 acres or less	164,316	52,910	93,971	93,858	76,886	31,270	111,529	68,170	63,932	55,952
1,601 acres or over	376,701	161,252	239,870	221,528	183,552	91,667	256,649	160,423	126,760	115,339
Cropland Tenure										
Full tenant	207,172	62,997	125,161	108,168	109,903	25,618	140,483	85,428	63,070	71,422
1-20 percent owned	387,926	153,664	236,022	198,594	183,009	105,465	261,496	162,126	131,344	126,013
21-40 percent owned	343,736	105,834	218,475	211,403	168,309	78,930	227,967	133,403	125,266	104,563
41 percent or over owned	286,103	88,755	167,740	146,766	118,748	38,517	163,520	94,885	80,698	71,005
Net Farm Income										
Negative	153,655	62,651	95,877	81,306	77,860	64,658	173,573	106,335	80,621	91,554
\$0-\$24,999	129,262	45,592	85,594	76,252	79,356	27,980	124,294	76,238	58,594	60,280
\$25,000-\$49,999	219,753	94,622	149,780	127,291	120,473	58,194	181,050	110,650	77,680	77,394
\$50,000 or more	428,967	183,260	286,818	271,285	235,941	74,147	250,393	140,807	138,181	118,351
Debt-to-Asset Ratio										
0-40 percent	408,060	159,574	261,701	226,895	188,628	31,577	139,650	91,235	65,681	53,241
41-70 percent	296,315	99,821	181,736	176,394	149,161	74,152	226,064	134,623	121,676	106,894
71 percent or more	177,404	68,690	114,082	112,738	101,215	71,095	189,487	123,491	120,645	114,320
Farmer Age										
34 years or younger	178,332	46,926	102,061	106,983	99,211	23,206	134,068	73,354	63,385	61,543
35-44 years	349,253	125,817	215,145	209,680	175,787	88,689	227,444	155,259	123,991	112,447
45 years or older	327,900	100,831	195,169	169,330	141,580	58,324	192,319	118,838	104,431	93,363

TABLE 4. LIQUIDITY MEASURES, QUARTILE VALUES FOR 2004, MEDIAN VALUES FOR 2003, AND 5-YEAR AVERAGE, 1999-2003, OF MEDIAN VALUES, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM PARTICIPANTS.

Farm Group	2004					2004				
	Upper Quartile	Lower Quartile	Median	2003 Median	Average of 1999-2003 Medians	Upper Quartile	Lower Quartile	Median	2003 Median	Average of 1999-2003 Medians
	Current Ratio					Working Capital(\$)				
All Farms	2.2	1.0	1.3	1.4	1.3	118,543	1,060	35,264	39,712	31,395
Region										
Red River Valley	2.6	1.1	1.4	1.6	1.4	165,956	10,885	77,059	92,277	62,413
North Central	2.1	1.0	1.3	1.4	1.3	97,503	833	34,050	36,007	27,863
South Central	2.3	1.0	1.3	1.5	1.3	119,583	-3,740	29,079	32,944	26,208
West	2.3	1.1	1.4	1.4	1.4	113,441	6,470	25,418	26,744	31,991
Farm Enterprise										
Crop	2.4	1.0	1.3	1.5	1.3	139,787	-1,064	38,468	53,866	34,115
Livestock	2.4	1.1	1.5	1.4	1.4	85,161	5,699	33,325	26,187	27,631
Mixed	1.9	1.1	1.3	1.3	1.4	100,224	9,054	28,703	26,383	33,323
Farm Sales										
\$99,999 or less	1.8	1.0	1.4	1.4	1.3	24,582	82	10,606	11,776	9,475
\$100,000-\$249,999	1.9	1.0	1.3	1.4	1.3	57,740	-5,285	23,848	30,839	28,290
\$250,000 or over	2.6	1.1	1.4	1.5	1.4	201,169	15,397	80,393	89,852	68,744
Farm Size										
1,600 acres or less	2.1	1.0	1.3	1.5	1.3	55,359	-2,365	16,639	20,554	13,513
1,601 acres or over	2.4	1.1	1.4	1.4	1.4	158,245	8,725	59,323	64,153	48,598
Cropland Tenure										
Full tenant	2.4	1.0	1.3	1.5	1.3	64,176	659	17,000	23,225	23,282
1-20 percent owned	1.9	1.0	1.2	1.4	1.3	130,666	-1,364	37,901	60,424	42,083
21-40 percent owned	2.1	1.0	1.4	1.4	1.3	132,213	324	43,142	56,565	36,490
41 percent or over owned	2.8	1.1	1.5	1.5	1.4	135,419	11,125	45,033	32,598	29,664
Net Farm Income										
Negative	1.1	0.7	0.8	1.0	0.9	7,507	-49,312	-16,123	2,042	-10,246
\$0-\$24,999	1.5	0.9	1.2	1.2	1.2	23,491	-12,153	9,396	11,155	9,552
\$25,000-\$49,999	1.7	1.0	1.2	1.3	1.3	56,233	689	25,626	25,078	24,959
\$50,000 or more	3.5	1.2	1.9	1.7	1.7	219,810	42,178	108,860	102,105	89,619
Debt-to-Asset Ratio										
0-40 percent	5.9	1.9	2.7	2.9	3.3	281,861	72,576	155,578	132,161	116,615
41-70 percent	1.8	1.1	1.3	1.4	1.3	84,681	6,781	36,491	41,189	31,685
71 percent or more	1.2	0.8	1.0	1.0	1.0	16,710	-28,659	1,490	4,312	-3,765
Farmer Age										
34 years or younger	2.2	1.1	1.4	1.5	1.4	51,429	3,332	18,418	28,550	26,313
35-44 years	2.0	1.0	1.3	1.4	1.3	116,453	8,725	37,036	49,143	36,139
45 years or older	2.6	1.0	1.4	1.4	1.3	139,258	-1,720	48,216	47,830	31,241

TABLE 5. TOTAL ASSETS AND TOTAL LIABILITIES, QUARTILE VALUES FOR 2004, MEDIAN VALUES FOR 2003, AND 5-YEAR AVERAGE, 1999-2003, OF MEDIAN VALUES, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM PARTICIPANTS

Farm Group	2004					2004				
	Upper Quartile	Lower Quartile	Median	2003 Median	Average of 1999-2003 Medians	Upper Quartile	Lower Quartile	Median	2003 Median	Average of 1999-2003 Medians
	Total Farm Assets(\$)					Total Farm Liabilities(\$)				
All Farms	1,093,990	423,269	652,575	612,437	560,327	192,213	500,734	323,805	305,268	283,641
Region										
Red River Valley	1,547,983	586,135	1,001,878	884,387	797,033	232,245	665,262	400,351	367,964	375,184
North Central	981,744	449,389	665,756	583,419	529,726	204,381	491,799	329,805	314,305	271,829
South Central	985,678	390,926	577,232	541,340	528,825	176,590	454,811	294,691	273,502	276,038
West	895,794	337,210	529,125	522,548	524,027	179,238	472,666	275,839	261,743	252,694
Farm Enterprise										
Crop	1,235,370	466,652	738,893	673,448	606,640	216,612	543,407	348,652	319,119	291,533
Livestock	719,465	346,575	513,080	496,922	478,062	161,414	390,742	252,414	251,724	254,637
Mixed	936,798	386,570	583,884	542,990	517,559	198,785	501,477	318,174	284,586	272,744
Farm Sales										
\$99,999 or less	349,316	122,480	247,960	278,088	284,898	84,613	191,944	137,347	148,298	155,425
\$100,000-\$249,999	630,562	352,108	476,655	465,221	470,111	189,839	378,745	263,300	247,229	250,090
\$250,000 or over	1,446,032	707,481	1,001,878	925,437	898,801	280,288	661,893	433,246	419,674	406,899
Farm Size										
1,600 acres or less	579,247	268,005	415,288	411,925	365,819	137,003	331,962	219,809	210,632	198,358
1,601 acres or over	1,296,076	594,347	863,825	752,720	694,867	255,323	608,334	408,719	373,129	341,714
Cropland Tenure										
Full tenant	543,276	210,079	375,081	302,549	302,597	95,271	316,527	197,649	200,924	188,365
1-20 percent owned	1,165,615	515,536	728,596	630,968	588,957	244,944	603,551	385,945	360,640	326,071
21-40 percent owned	1,369,744	484,152	800,627	757,631	642,104	244,197	628,323	381,296	362,288	329,682
41 percent or over owned	1,132,347	472,336	710,725	706,818	641,560	191,187	485,397	314,816	318,370	286,537
Net Farm Income										
Negative	786,015	300,608	478,988	390,691	426,591	201,358	509,373	307,280	284,586	305,021
\$0-\$24,999	545,451	260,790	355,482	412,795	383,398	134,255	366,698	244,151	227,193	223,134
\$25,000-\$49,999	775,801	372,658	512,299	457,098	474,450	190,466	430,741	307,092	254,123	252,690
\$50,000 or more	1,453,943	673,755	997,922	890,614	823,430	231,948	617,973	386,246	362,787	331,890
Debt-to-Asset Ratio										
0-40 percent	1,491,880	576,515	932,883	817,574	718,444	96,884	332,084	196,608	166,898	146,172
41-70 percent	1,091,014	465,310	696,904	647,184	602,837	240,450	579,850	379,135	351,810	324,443
71 percent or more	627,330	283,475	446,116	457,462	413,832	256,301	549,932	366,698	386,699	369,126
Farmer Age										
34 years or younger	593,267	238,247	383,050	334,869	346,947	136,282	369,281	254,355	247,229	216,193
35-44 years	1,137,860	493,885	706,015	675,763	588,942	249,426	611,547	380,136	361,925	322,205
45 years or older	1,235,370	474,507	742,835	667,379	620,296	190,205	522,400	321,040	317,888	286,797

TABLE 6. SOLVENCY MEASURES, QUARTILE VALUES FOR 2004, MEDIAN VALUES FOR 2003, AND 5-YEAR AVERAGE, 1999-2003, OF MEDIAN VALUES, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM PARTICIPANTS.

Farm Group	2004					2004					2004				
	Upper Quartile	Lower Quartile	Median	2003 Median	Average of 1999-2003 Medians	Upper Quartile	Lower Quartile	Median	2003 Median	Average of 1999-2003 Medians	Upper Quartile	Lower Quartile	Median	2003 Median	Average of 1999-2003 Medians
	Debt-to-Asset (%)					Equity-to-Asset (%)					Debt-to-Equity				
All Farms	35.4	71.9	54.3	54.3	54.5	64.6	28.1	45.7	45.7	45.5	0.5	2.6	1.2	1.2	1.2
Region															
Red River Valley	31.9	61.5	49.0	45.6	49.0	68.1	38.5	51.0	54.4	51.0	0.5	1.6	1.0	0.8	1.0
North Central	36.6	71.0	54.9	57.8	55.9	63.4	29.0	45.1	42.2	44.1	0.6	2.4	1.2	1.4	1.3
South Central	34.9	72.1	54.2	51.2	54.3	65.1	27.9	45.8	48.8	45.7	0.5	2.6	1.2	1.0	1.2
West	42.1	78.0	59.9	63.2	57.1	57.9	22.0	40.1	36.8	42.9	0.7	3.5	1.5	1.7	1.3
Farm Enterprise															
Crop	32.8	70.6	51.8	49.8	52.4	67.2	29.4	48.2	50.2	47.6	0.5	2.4	1.1	1.0	1.1
Livestock	37.6	72.4	58.0	62.1	58.0	62.4	27.6	42.0	37.9	42.0	0.6	2.6	1.4	1.6	1.4
Mixed	42.5	79.9	58.8	60.8	57.1	57.5	20.1	41.2	39.2	42.9	0.7	4.0	1.4	1.6	1.3
Farm Sales															
\$99,999 or less	46.8	78.9	57.0	64.3	61.9	53.2	21.1	43.0	35.7	38.1	0.9	3.7	1.3	1.8	1.6
\$100,000-\$249,999	41.7	80.1	61.7	56.6	56.7	58.3	19.9	38.3	43.4	43.3	0.7	4.0	1.6	1.3	1.3
\$250,000 or over	28.5	65.5	49.0	50.1	50.4	71.5	34.5	51.0	49.9	49.6	0.4	1.9	1.0	1.0	1.0
Farm Size															
1,600 acres or less	41.7	79.2	59.1	60.4	60.0	58.3	20.8	40.9	39.6	40.0	0.7	3.8	1.4	1.5	1.5
1,601 acres or over	32.8	67.0	51.2	51.4	52.3	67.2	33.0	48.8	48.6	47.7	0.5	2.0	1.0	1.1	1.1
Cropland Tenure															
Full tenant	40.9	77.2	58.0	61.6	60.9	59.1	22.8	42.0	38.4	39.1	0.7	3.4	1.4	1.6	1.6
1-20 percent owned	38.4	71.1	55.7	58.3	56.1	61.6	28.9	44.3	41.7	43.9	0.6	2.5	1.3	1.4	1.3
21-40 percent owned	34.4	72.1	55.3	50.1	52.9	65.6	27.9	44.7	49.9	47.1	0.5	2.6	1.2	1.0	1.1
41 percent or over owned	32.7	67.4	49.4	49.5	50.9	67.3	32.6	50.6	50.5	49.1	0.5	2.1	1.0	1.0	1.0
Net Farm Income															
Negative	51.3	91.3	74.9	75.2	74.7	48.7	8.7	25.1	24.8	25.3	1.1	10.5	3.0	3.0	2.9
\$0-\$24,999	53.7	84.7	71.6	65.5	64.1	46.3	15.3	28.4	34.5	35.9	1.2	5.5	2.5	1.9	1.8
\$25,000-\$49,999	43.8	72.2	57.4	63.3	58.7	56.2	27.8	42.6	36.7	41.3	0.8	2.6	1.3	1.7	1.4
\$50,000 or more	27.0	58.7	42.8	42.5	44.6	73.0	41.3	57.2	57.5	55.4	0.4	1.4	0.7	0.7	0.8
Debt-to-Asset Ratio															
0-40 percent	14.2	33.0	26.2	24.9	24.2	85.8	67.0	73.8	75.1	75.8	0.2	0.5	0.4	0.3	0.3
41-70 percent	47.7	61.4	55.3	55.5	55.2	52.3	38.6	44.7	44.5	44.8	0.9	1.6	1.2	1.2	1.2
71 percent	76.7	90.8	82.7	82.9	84.7	23.3	9.2	17.3	17.1	15.3	3.3	9.9	4.8	4.8	5.5
Farmer Age															
34 years or younger	50.6	84.5	71.0	72.7	63.4	49.4	15.5	29.0	27.3	36.6	1.0	5.5	2.4	2.7	1.7
35-44 years	40.6	72.0	56.7	53.1	55.2	59.4	28.0	43.3	46.9	44.8	0.7	2.6	1.3	1.1	1.2
45 years or older	27.7	65.2	48.4	49.6	51.2	72.3	34.8	51.6	50.4	48.8	0.4	1.9	0.9	1.0	1.0

TABLE 7. RATE OF RETURN ON ASSETS AND RATE OF RETURN ON EQUITY PROFITABILITY MEASURES, QUARTILE VALUES FOR 2004, MEDIAN VALUES FOR 2003, AND 5-YEAR AVERAGE, 1999-2003, OF MEDIAN VALUES NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM PARTICIPANTS.

Farm Group	2004					2004				
	Upper Quartile	Lower Quartile	Median	2003 Median	Average of 1999-2003 Medians	Upper Quartile	Lower Quartile	Median	2003 Median	Average of 1999-2003 Medians
	Return on Farm Assets(%)					Return on Equity(%)				
All Farms	9.9	2.2	6.1	7.0	6.6	15.2	-0.1	6.7	8.4	6.5
Region										
Red River Valley	10.7	4.2	7.2	9.1	9.2	15.9	3.1	9.2	11.7	12.7
North Central	9.9	1.8	5.1	7.1	7.0	14.6	-0.8	5.0	8.7	7.2
South Central	9.0	1.8	5.2	6.8	5.8	15.1	-0.9	5.6	8.5	4.9
West	10.3	2.9	6.5	4.2	5.1	15.4	0.3	9.4	0.5	4.2
Farm Enterprise										
Crop	10.1	1.9	6.2	9.5	7.8	15.0	-0.5	7.1	12.0	8.5
Livestock	9.7	2.7	5.7	3.6	4.9	18.4	0.0	5.8	1.0	3.5
Mixed	8.2	2.3	5.5	4.6	4.9	13.9	0.0	6.7	3.1	3.3
Farm Sales										
\$99,999 or less	6.3	0.8	3.3	2.8	2.0	15.7	-3.3	1.7	0.0	-2.0
\$100,000-\$249,999	8.9	1.7	5.1	5.4	6.0	15.0	-3.5	5.1	5.6	5.8
\$250,000 or over	10.6	3.3	6.8	9.2	8.7	15.7	1.2	8.1	12.2	10.4
Farm Size										
1,600 acres or less	9.0	1.4	5.0	5.6	4.9	15.9	-2.6	5.2	6.3	3.4
1,601 acres or over	10.1	3.0	6.4	7.7	7.4	14.9	0.5	7.2	9.3	7.8
Cropland Tenure										
Full tenant	13.3	1.7	5.9	6.8	7.4	20.3	-0.7	7.2	7.1	7.3
1-20 percent owned	10.7	1.9	6.3	9.1	8.6	17.3	-1.6	8.8	12.1	10.9
21-40 percent owned	9.0	2.8	6.1	8.0	7.0	14.3	-0.8	6.5	10.1	6.8
41 percent or over owned	8.5	2.8	6.1	5.5	5.0	12.8	0.1	6.4	5.9	3.9
Net Farm Income										
Negative	-2.9	-8.6	-4.7	-5.9	-4.4	-8.5	-47.1	-20.3	-30.2	-24.4
\$0-\$24,999	3.9	0.6	1.8	2.0	2.1	1.6	-8.4	-1.8	-3.3	-2.8
\$25,000-\$49,999	7.1	3.0	4.8	5.9	6.4	11.0	0.9	4.8	6.7	6.1
\$50,000 or more	12.8	6.6	9.4	10.5	11.3	21.0	7.8	12.9	15.1	15.6
Debt-to-Asset Ratio										
0-40 percent	10.3	3.5	6.8	9.0	7.5	12.8	3.1	7.1	9.6	7.8
41-70 percent	10.7	3.0	6.3	7.1	7.2	16.2	0.4	7.9	9.6	8.1
71 percent or more	8.0	-0.2	3.7	4.2	4.1	21.2	-15.9	0.0	0.0	-0.7
Farmer Age										
34 years or younger	13.5	3.3	6.8	7.9	8.2	27.5	0.4	14.3	9.8	10.8
35-44 years	10.1	3.1	6.8	7.7	7.4	16.5	0.9	9.1	11.3	8.6
45 years or older	8.6	1.4	5.2	6.4	5.7	11.9	-1.3	4.9	7.4	4.7

TABLE 8. OPERATING PROFIT MARGIN AND NET FARM INCOME PROFITABILITY MEASURES, QUARTILE VALUES FOR 2004, MEDIAN VALUES FOR 2003, AND 5-YEAR AVERAGE, 1999-2003, OF MEDIAN VALUES, NORTH DAKOTA FARM BUSINESS MANAGEMENT PROGRAM PARTICIPANTS.

Farm Group	2004					2004				
	Upper Quartile	Lower Quartile	Median	2003 Median	Average of 1999-2003 Medians	Upper Quartile	Lower Quartile	Median	2003 Median	Average of 1999-2003 Medians
	Operating Profit Margin(%)					Net Farm Income(\$)				
All Farms	23.2	6.1	15.1	17.4	17.2	95,348	19,788	44,912	49,181	40,417
Region										
Red River Valley	22.0	8.9	16.2	18.9	18.8	146,159	35,330	85,376	79,869	74,394
North Central	22.8	6.0	14.5	18.6	18.1	82,697	19,611	42,479	50,134	40,864
South Central	21.7	5.1	12.9	16.3	15.2	84,417	13,748	38,218	46,147	34,360
West	27.3	6.4	17.2	11.1	16.0	81,864	19,364	48,605	26,094	31,992
Farm Enterprise										
Crop	21.4	4.9	13.1	18.5	17.0	108,216	21,545	52,414	71,260	52,124
Livestock	32.3	12.0	19.9	13.9	18.2	71,277	18,500	35,376	25,242	26,267
Mixed	24.9	6.6	14.9	14.8	16.2	65,962	19,672	40,710	31,011	30,360
Farm Sales										
\$99,999 or less	25.3	1.4	14.2	10.7	8.8	21,603	4,789	14,359	11,365	11,230
\$100,000-\$249,999	21.8	4.8	14.1	15.5	17.4	52,679	14,252	32,405	36,136	34,909
\$250,000 or over	23.5	8.1	15.8	19.1	19.2	128,906	39,139	83,880	96,963	81,408
Farm Size										
1,600 acres or less	22.0	2.6	13.8	15.8	14.3	53,009	11,048	27,136	29,103	24,337
1,601 acres or over	23.9	7.7	15.5	18.3	18.8	111,096	32,014	62,452	62,734	53,457
Cropland Tenure										
Full tenant	21.3	2.7	11.1	12.9	13.6	56,095	15,472	33,996	31,746	31,802
1-20 percent owned	19.5	4.3	12.6	17.0	16.6	113,214	25,024	57,557	66,988	57,110
21-40 percent owned	22.6	6.2	14.6	19.2	17.9	98,273	24,975	60,924	60,526	45,881
41 percent or over owned	28.9	11.2	19.6	19.5	19.3	95,636	20,539	42,590	41,638	33,501
Net Farm Income										
Negative	-6.3	-25.2	-14.7	-14.9	-13.3	-7,708	-26,677	-15,418	-11,250	-12,526
\$0-\$24,999	14.4	1.1	6.1	5.4	6.7	20,194	9,113	14,797	12,528	13,670
\$25,000-\$49,999	18.0	7.9	12.0	15.7	17.0	40,865	30,612	35,548	36,383	36,343
\$50,000 or more	29.2	16.3	22.0	23.4	25.5	142,254	68,501	96,693	103,391	91,658
Debt-to-Asset Ratio										
0-40 percent	27.3	12.2	17.8	21.7	21.2	142,489	41,934	81,203	82,772	63,895
41-70 percent	24.1	8.0	16.3	18.7	18.4	90,726	26,344	49,598	54,220	45,858
71 percent or more	17.2	-0.3	8.2	10.1	9.9	42,254	3,751	21,121	25,438	18,391
Farmer Age										
34 years or younger	23.2	7.1	16.4	17.2	18.1	61,257	15,890	34,133	32,912	33,701
35-44 years	22.0	8.3	15.2	17.5	17.2	105,199	28,458	57,126	55,953	46,115
45 years or older	23.9	5.0	14.4	17.4	17.1	97,730	19,205	44,279	50,881	38,869

TABLE 9. REPAYMENT CAPACITY MEASURES, QUARTILE VALUES FOR 2004, MEDIAN VALUES FOR 2003, AND 5-YEAR AVERAGE, 1999-2003, OF MEDIAN VALUES, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM PARTICIPANTS.

Farm Group	2004					2004				
	Upper Quartile	Lower Quartile	Median	2003 Median	Average of 1999-2003 Medians	Upper Quartile	Lower Quartile	Median	2003 Median	Average of 1999-2003 Medians
	Term Debt Coverage Ratio					Term Debt and Capital Repayment Margin(\$)				
All Farms	2.58	0.80	1.52	1.6	1.4	51,416	-7,003	18,752	21,012	13,536
Region										
Red River Valley	2.85	0.81	1.55	2.1	1.8	74,015	-7,299	31,364	61,557	39,566
North Central	2.41	0.72	1.32	1.6	1.3	42,138	-10,350	10,573	17,151	8,350
South Central	2.72	0.83	1.48	1.8	1.4	49,333	-4,973	21,406	24,319	12,069
West	2.24	1.00	1.65	1.1	1.3	52,306	-446	21,530	3,600	9,676
Farm Enterprise										
Crop	2.69	0.71	1.44	2.0	1.6	57,881	-11,055	16,055	37,494	19,987
Livestock	2.53	1.12	1.70	1.1	1.2	46,794	3,143	24,441	3,601	6,443
Mixed	2.25	0.79	1.42	1.3	1.3	43,436	-9,754	15,843	10,942	8,250
Farm Sales										
\$99,999 or less	2.16	0.79	1.56	1.1	1.1	22,210	-3,593	8,237	1,850	930
\$100,000-\$249,999	2.23	0.54	1.23	1.3	1.3	31,972	-13,050	8,418	11,282	8,674
\$250,000 or over	2.91	0.93	1.60	2.0	1.7	75,818	-3,039	35,986	56,522	38,466
Farm Size										
1,600 acres or less	2.36	0.68	1.42	1.4	1.2	30,551	-8,693	8,502	9,542	5,992
1,601 acres or over	2.66	0.90	1.57	1.7	1.5	63,403	-5,583	28,414	34,395	21,247
Cropland Tenure										
Full tenant	3.22	0.47	1.58	1.6	1.5	37,351	-13,412	9,470	11,348	9,839
1-20 percent owned	2.14	0.56	1.20	1.8	1.5	52,344	-13,040	9,618	29,420	19,997
21-40 percent owned	2.55	0.79	1.42	1.9	1.5	51,372	-6,983	20,890	33,835	19,285
41 percent or over owned	2.51	1.00	1.66	1.4	1.3	58,934	-107	25,676	15,071	10,202
Net Farm Income										
Negative	0.59	-0.67	0.00	0.3	0.2	-11,154	-54,317	-37,626	-25,227	-27,439
\$0-\$24,999	1.54	0.45	0.89	1.1	0.9	8,357	-18,357	-2,913	1,058	-3,403
\$25,000-\$49,999	2.24	0.85	1.44	1.2	1.3	30,403	-6,432	12,177	8,290	9,864
\$50,000 or more	3.35	1.40	2.10	2.4	2.3	80,933	23,917	51,083	64,874	52,191
Debt-to-Asset Ratio										
0-40 percent	4.72	1.64	2.82	3.1	2.7	92,885	24,473	51,384	57,641	38,263
41-70 percent	2.16	0.73	1.41	1.6	1.4	44,142	-9,770	16,499	22,601	14,862
71 percent or more	1.52	0.45	0.92	1.0	0.8	15,589	-22,423	-2,855	1,058	-6,247
Farmer Age										
34 years or younger	2.79	1.14	1.81	1.8	1.7	39,653	3,044	22,120	15,582	13,315
35-44 years	2.27	0.83	1.42	1.5	1.4	51,091	-7,666	19,409	17,767	13,990
45 years or older	2.61	0.72	1.43	1.6	1.3	55,474	-10,268	16,502	24,382	12,587

TABLE 10. ASSET TURNOVER AND OPERATING EXPENSE AND DEPRECIATION EXPENSE EFFICIENCY MEASURES (AS A PERCENTAGE OF GROSS FARM INCOME), QUARTILE VALUES FOR 2004, MEDIAN VALUES FOR 2003, AND 5-YEAR AVERAGE, 1999-2003, OF MEDIAN VALUES, FARM BUSINESS MANAGEMENT EDUCATION PROGRAM PARTICIPANTS.

Farm Group	2004					2004					2004				
	Upper Quartile	Lower Quartile	Median	2003 Median	Average of 1999-2003 Medians	Upper Quartile	Lower Quartile	Median	2003 Median	Average of 1999-2003 Medians	Upper Quartile	Lower Quartile	Median	2003 Median	Average of 1999-2003 Medians
	Asset Turnover					Operating Expense(%)					Depreciation Expense (%)				
All Farms	.56	.30	.40	.42	.39	59.7	78.2	69.2	66.8	66.2	3.3	9.0	6.0	5.9	5.7
Region															
Red River Valley	.62	.37	.48	.50	.49	64.3	77.7	71.2	66.8	67.8	3.9	6.7	5.3	5.4	5.3
North Central	.55	.30	.39	.43	.39	60.7	77.5	69.6	65.2	64.7	2.5	7.4	5.6	5.7	4.8
South Central	.56	.30	.39	.39	.39	59.5	79.6	69.2	67.1	67.9	4.1	10.2	7.4	6.2	6.7
West	.47	.28	.37	.32	.31	56.1	76.9	64.0	72.2	65.6	4.6	10.2	7.6	6.3	6.8
Farm Enterprise															
Crop	.62	.35	.47	.50	.47	64.2	79.6	71.7	66.0	66.7	3.7	7.8	5.9	5.6	5.6
Livestock	.38	.21	.29	.25	.25	51.5	69.8	59.3	70.1	63.5	3.5	13.6	7.8	7.0	6.0
Mixed	.47	.27	.34	.33	.31	58.6	78.2	69.2	69.5	66.3	1.9	9.9	6.4	7.3	6.2
Farm Sales															
\$99,999 or less	.46	.19	.27	.21	.24	47.3	74.8	58.0	63.0	62.9	1.8	14.1	7.1	8.3	6.4
\$100,000-\$249,999	.51	.30	.37	.39	.37	59.2	79.1	69.1	67.0	65.3	2.5	9.2	5.5	5.8	5.5
\$250,000 or over	.59	.34	.44	.49	.48	63.2	78.1	70.6	66.7	67.6	4.1	8.4	6.3	5.8	5.7
Farm Size															
1,600 acres or less	.57	.29	.40	.40	.37	58.6	79.2	68.7	66.5	66.0	2.8	9.4	5.6	6.2	5.7
1,601 acres or over	.55	.31	.41	.43	.41	60.4	77.6	69.6	67.0	66.2	3.7	8.7	6.3	5.8	5.7
Cropland Tenure															
Full tenant	.84	.41	.56	.63	.56	61.0	81.0	72.3	69.7	69.0	2.8	9.3	6.1	5.6	5.2
1-20 percent owned	.66	.43	.56	.54	.52	67.0	81.1	73.4	70.0	69.2	3.2	7.2	5.3	5.5	5.4
21-40 percent owned	.50	.33	.41	.42	.39	63.1	78.3	71.1	65.7	66.5	3.3	8.4	6.0	5.9	5.5
41 percent or over owned	.35	.23	.30	.28	.26	53.6	71.2	61.7	62.5	62.1	4.1	11.3	6.5	6.3	6.2
Net Farm Income															
Negative	.50	.22	.35	.32	.29	84.4	98.8	89.1	89.8	87.9	4.8	14.2	7.9	8.3	9.1
\$0-\$24,999	.58	.24	.35	.32	.31	59.7	81.0	73.5	71.9	71.0	3.4	11.8	6.3	8.2	6.7
\$25,000-\$49,999	.57	.31	.39	.41	.39	62.5	77.9	71.8	67.3	65.3	2.8	9.4	5.5	4.6	5.3
\$50,000 or more	.56	.33	.43	.47	.47	57.1	71.1	64.5	62.7	61.3	3.2	8.1	5.7	5.6	5.0
Debt-to-Asset Ratio															
0-40 percent	.46	.25	.36	.39	.35	58.2	73.5	64.9	61.5	62.0	4.7	9.7	6.8	6.2	6.6
41-70 percent	.55	.31	.41	.44	.40	59.3	77.4	68.7	66.4	65.0	3.0	8.4	5.5	5.2	5.2
71 percent or more	.65	.34	.46	.45	.44	65.3	83.4	75.9	73.7	73.1	3.2	8.7	5.8	6.2	5.3
Farmer Age															
34 years or younger	.73	.37	.51	.51	.48	55.6	75.0	65.0	65.2	65.8	3.2	8.8	5.0	5.2	4.3
35-44 years	.58	.34	.43	.42	.43	61.6	77.2	69.6	68.8	67.5	3.1	8.4	6.1	6.2	5.7
45 years or older	.50	.27	.36	.39	.34	60.6	79.8	70.3	66.0	65.2	3.7	9.4	6.3	5.9	6.2

TABLE 11. INTEREST EXPENSE AND FARM INCOME EFFICIENCY MEASURES (AS A PERCENTAGE OF GROSS FARM INCOME), QUARTILE VALUES FOR 2004, MEDIAN VALUES FOR 2003, AND 5-YEAR AVERAGE, 1999-2003, OF MEDIAN VALUES, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM PARTICIPANTS.

Farm Group	2004					2004				
	Upper Quartile	Lower Quartile	Median	2003 Median	Average of 1999-2003 Medians	Upper Quartile	Lower Quartile	Median	2003 Median	Average of 1999-2003 Medians
	Interest Expense(%)					Net Farm Income (%)				
All Farms	3.3	8.6	5.6	5.6	7.2	26.2	9.3	18.6	19.6	19.0
Region										
Red River Valley	2.5	6.6	4.0	3.9	5.3	25.5	14.3	18.9	21.7	20.6
North Central	3.4	9.0	5.8	5.8	7.8	27.1	9.5	19.0	22.4	21.9
South Central	3.3	8.5	5.4	5.0	6.9	25.2	8.5	16.6	19.1	16.6
West	4.2	9.4	6.8	7.4	8.7	29.9	10.0	19.9	12.8	17.1
Farm Enterprise										
Crop	3.0	7.3	4.7	4.7	6.3	25.2	8.7	17.5	22.7	19.9
Livestock	4.8	10.5	7.5	8.7	10.1	32.4	13.5	21.0	13.5	18.5
Mixed	4.3	9.1	6.5	7.5	9.1	25.8	17.8	17.8	16.8	17.9
Farm Sales										
\$99,999 or less	4.8	12.9	8.7	10.5	11.5	33.7	7.8	21.1	17.6	16.7
\$100,000-\$249,999	2.5	9.2	6.6	6.0	7.9	25.7	8.9	17.6	19.4	19.8
\$250,000 or over	2.7	6.8	4.6	4.7	6.0	26.2	10.2	18.6	20.8	19.2
Farm Size										
1,600 acres or less	3.6	9.5	6.0	5.8	7.7	25.7	8.7	18.1	20.4	19.0
1,601 acres or over	3.1	8.0	5.5	5.4	6.9	26.7	9.7	18.7	19.3	18.9
Cropland Tenure										
Full tenant	2.5	6.2	4.2	4.6	5.4	24.9	10.2	17.3	18.1	18.6
1-20 percent owned	2.9	6.4	4.4	4.9	6.1	23.0	7.3	16.2	18.9	18.2
21-40 percent owned	3.8	8.8	6.4	5.9	7.7	25.0	8.5	17.3	21.7	19.0
41 percent or over owned	4.4	10.7	7.5	7.9	9.9	31.4	12.1	21.4	20.6	20.2
Net Farm Income										
Negative	6.4	12.2	8.5	9.7	13.0	-4.1	-15.7	-8.3	-7.9	-8.7
\$0-\$24,999	4.9	11.2	8.1	8.3	9.7	17.3	5.7	10.6	9.1	9.8
\$25,000-\$49,999	3.7	8.1	5.3	6.3	7.5	21.4	10.9	16.0	18.9	19.4
\$50,000 or more	2.4	6.5	4.2	4.0	5.4	31.6	19.1	24.9	26.8	27.7
Debt-to-Asset Ratio										
0-40 percent	1.5	4.7	2.9	3.0	3.7	32.4	17.2	24.0	27.9	27.0
41-70 percent	4.3	8.8	6.3	6.4	8.1	25.9	10.9	18.6	20.1	19.4
71 percent or more	5.5	11.2	8.0	8.2	10.2	18.5	2.9	10.8	11.2	10.2
Farmer Age										
34 years or younger	3.7	8.2	5.7	5.3	6.4	30.1	12.0	23.0	23.8	22.5
35-44 years	3.6	8.3	5.8	5.3	7.0	24.9	11.0	18.8	18.8	18.6
45 years or older	2.9	8.8	5.5	5.9	7.8	26.0	8.4	16.9	20.1	18.4

APPENDIX

DEFINITION OF FINANCIAL MEASURES

Sixteen measures of financial performance were calculated for each farm in this study. The recommendations of the farm financial standards council for calculating the ratios were followed as closely as possible, from the Finpack data.

The farm financial standards council stated that a more meaningful comparison between farms is achieved with market valuation of assets, but due to fluctuations in market values the cost method (acquisition cost less accumulated depreciation) is superior for comparisons over time for an individual farm operation. In fact, a dual column balance sheet is recommended: one column to value assets by the cost approach and a second column for market valuation of assets.

The valuation method used for current assets of farms in this study depended on what was most relevant and reliable. For example, current market value was used for grain and market livestock inventories, but prepaid expenses and supplies were listed at purchase cost.

Non-current asset valuation was:

- Machinery was valued at cost minus accumulated depreciation. Annual depreciation was 10 percent of un-depreciated value.
- Purchased breeding livestock was valued at cost. Raised replacement animals were valued at a conservative market value when they enter the breeding herd. This value remains constant until the animal leaves the herd.
- Generally, land was valued at cost. However, when a farmer enrolls in the farm business program there may be a one-time revaluing of land to a conservative market value.

Assets and liabilities not associated with the farm business are excluded from the calculation of farm financial performance measures. Accrued liabilities were included on the balance sheets but deferred tax liabilities were not.

The calculations of all financial measures, unless otherwise noted, are accrual adjusted. Examples are:

- Gross farm revenue is gross cash revenue plus the changes in crop and market livestock inventories and accounts receivable.
- Interest expense is cash interest plus the change in accrued interest.

LIQUIDITY

Current Ratio

Computation: Current assets divided by current liabilities.

Interpretation: This ratio measures the extent current assets will cover liabilities that are due during the next 12 months. The higher the ratio the more cushion the business has to meet short-run obligations without disrupting normal business operations. The current ratio's limitation as a measure of liquidity is that it does not match the timing of financial obligations with the liquidation of current assets, nor does it consider any new debt incurred or assets that may be generated during the 12 months after the balance sheet date.

Working Capital

Computation: Current assets minus current liabilities.

Interpretation: This measure shows the dollar amount that current assets can or cannot cover current liabilities. The amount of working capital necessary to provide an adequate cushion for meeting debt obligations must be related to the size of the business. Working capital as a measure of liquidity has similar limitations as the current ratio.

SOLVENCY

Debt-to-Asset

Computation: Total liabilities divided by total assets.

Interpretation: This ratio shows the proportion of assets owed to creditors. The lower the debt-to-asset ratio the higher the solvency of the

business. Solvency is a measure of risk exposure. As solvency decreases, the owner has less equity relative to debt, the ability to procure additional financing may decrease, and the business's ability to survive adverse outcomes is diminished. However, solvency should be viewed in connection with profitability. A low solvency position may be desirable if debt capital provides returns in excess of its cost.

Equity-to-Asset

Computation: Owner equity divided by total assets.

Interpretation: This ratio shows the portion of total assets represented by owner equity. It is another way of expressing solvency.

Debt-to-Equity

Computation: Total liabilities divided by owner equity.

Interpretation: This ratio shows the extent to which debt capital is combined with equity capital. It is another way of expressing solvency.

PROFITABILITY

Rate of Return on Assets (ROA)

Computation: Net farm income plus interest expense minus a charge for unpaid operator labor and management, divided by average total assets.

Interpretation: This ratio measures the pre-tax rate of return on farm assets and is used to evaluate whether assets are employed profitably in the business. Two important factors affecting this measure are valuation of assets and the charge for unpaid operator labor and management. A \$15,000 charge per full time operator plus five percent of gross revenue was used in the 2001-2004 analysis.

Rate of Return on Equity (ROE)

Computation: Net farm income minus a charge for unpaid operator labor and management, divided by average owner equity.

Interpretation: This ratio measures the pre-tax rate of return on equity capital employed in the business. Two important factors affecting this

measure are valuation of assets and the charge for unpaid operator labor and management. A \$15,000 charge per full time operator plus five percent of gross revenue was used in the 2001-2004 analysis. This ratio should be evaluated carefully and used in conjunction with other ratios when analyzing a farm business. If ROE is greater than ROA, debt capital is being employed profitably—it is earning more than it costs in interest. A high ratio may indicate an undercapitalized or highly leveraged business, and a low ratio may indicate a more conservative, high equity business.

Operating Profit Margin

Computation: Net farm income plus interest expense minus a charge for unpaid operator labor and management, divided by the value of farm production. Value of farm production is gross farm revenue less purchase of market livestock and feed.

Interpretation: This ratio measures net farm income per dollar of farm production. It is a pre-tax measure of profit margin from the employment of assets. An important factor is the charge for unpaid operator labor and management. There is a relationship between operating profit margin, asset turnover rate, and ROA. Operating profit margin multiplied by asset turnover rate equals ROA.

Net Farm Income

Computation: Net farm income is total revenue earned minus the costs incurred to generate those revenues. It is cash revenue less cash expense and depreciation plus capital adjustments (gain or loss from sale of capital assets). Accrual adjustments for changes in inventories are included to properly match revenues and expenses to the time period for which net farm income is being measured.

Interpretation: Net farm income is the return to the operator for unpaid labor and management and equity capital used in the farm business. Net farm income is an absolute amount and it is difficult to assign a standard to all farms because of differences in the amount of unpaid operator labor and equity used.

REPAYMENT CAPACITY

Term Debt Coverage Ratio

Calculation: Net farm income plus depreciation and other capital adjustments plus non-farm income plus scheduled interest on term debt minus family living expense and income taxes, divided by scheduled term debt principal and interest payments.

Interpretation: This ratio measures the capacity of the borrower to cover all term debt payments. The more the ratio exceeds 1, the greater the margin to cover term debt payments. The business may have sufficient earnings but the timing of cashflows may not be adequate to make the payments on a timely basis. Also, the ratio does not contain any provision for replacement of capital assets.

Capital Replacement and Term Debt Repayment Margin

Calculation: Net farm income plus depreciation and other capital adjustments plus non-farm income minus family living expense, income taxes, and scheduled term debt principal payments.

Interpretation: This is a measure of the business's ability to make payments on term debt. A positive margin indicates the amount available, after making term debt payments, for acquiring capital assets or servicing additional debt. The capital replacement and term debt repayment margin is a dollar amount, so it is impossible to establish a standard for all farm businesses.

FINANCIAL EFFICIENCY

Asset Turnover

Calculation: Value of farm production divided by average total assets. Value of farm production is gross farm revenue less purchase of market livestock and feed.

Interpretation: This is a measure of how efficiently assets are used in the business. The higher the number, the more production is created per dollar of assets. Asset turnover can vary significantly by type of farm and by asset base. For example, dairy and hog farms will typically have higher asset turnovers than cow-calf or cash grain operations.

Asset turnover will probably be higher if capital assets, such as machinery and land, are rented instead of owned.

Operating Expense Ratio

Calculation: Total expense less interest and depreciation and capital adjustment divided by gross farm revenue.

Interpretation: This ratio measures how efficiently operating expenses are managed to generate gross farm revenue. The operating expense ratio will typically vary by farm type.

Depreciation Expense Ratio

Calculation: Depreciation and capital adjustments divided by gross farm revenue.

Interpretation: This ratio expresses depreciation and capital adjustment relative to gross farm revenue. It will vary by farm type and from year to year. Caution must be used when evaluating this ratio. It does not comply with the farm financial standards because the Finpack program, used to generate the farm financial summaries, calculates depreciation and capital adjustment as one number (ending inventory plus capital sales less the sum of beginning inventory and capital purchases). Therefore depreciation cannot be isolated.

Interest Expense Ratio

Calculation: Interest expense divided by gross farm revenue.

Interpretation: This ratio shows the portion of gross farm revenue necessary to cover interest expense. It is often used as a measure of financial risk.

Net Farm Income Ratio

Calculation: Net farm income divided by gross farm revenue.

Interpretation: This is a measure of how efficient the farm business is at generating net income from gross revenue. It is the portion of gross farm revenue left after operating expense, depreciation and capital adjustment, and interest expense have been removed.

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