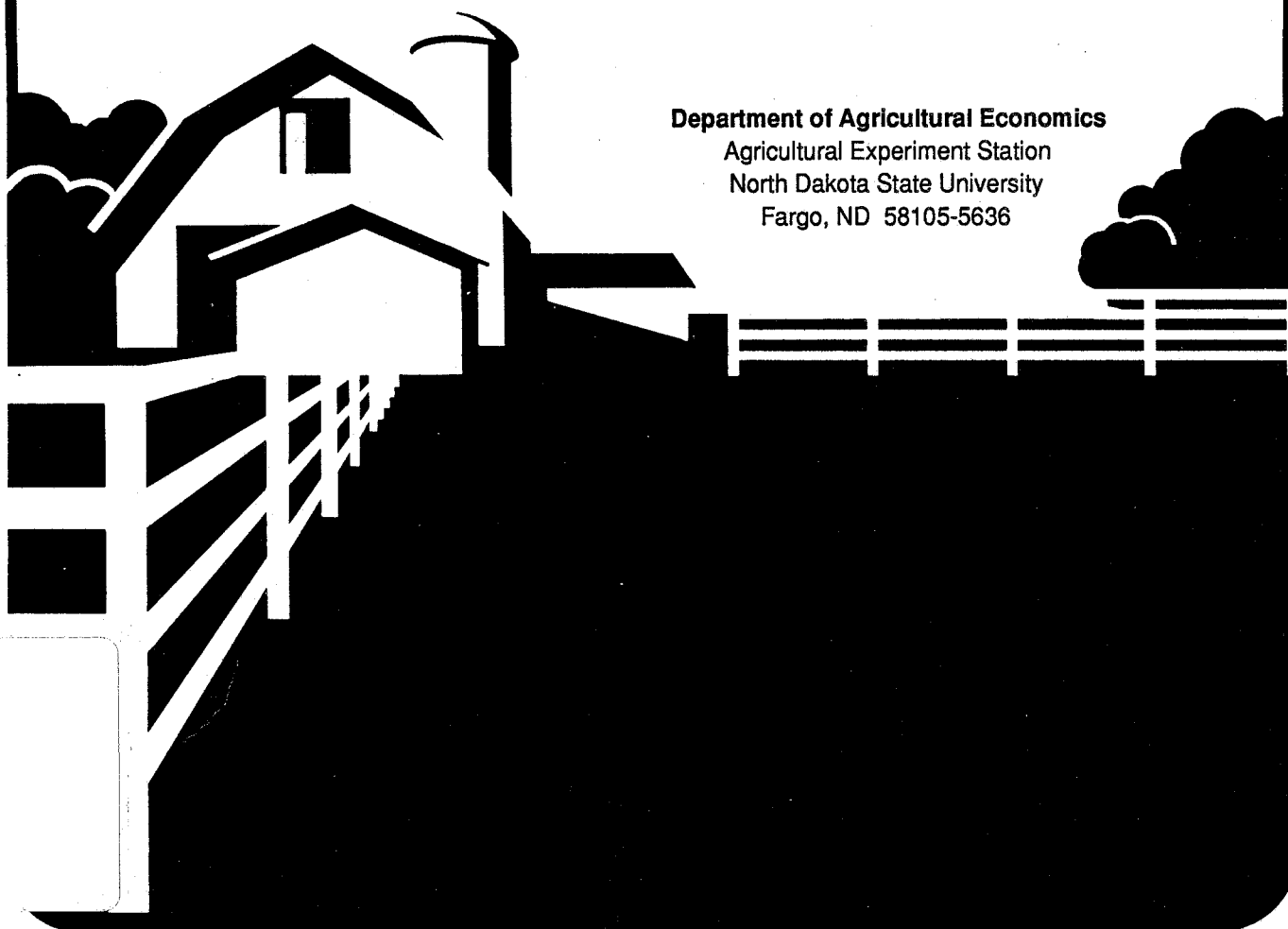


# Outlook of North Dakota Farm Households: Results of the 1988 Longitudinal Farm Survey

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## Highlights

This report is a comprehensive analysis of results from a March 1988 telephone survey of 557 farm operators who had been previously contacted in 1985 and 1986. Initial screening questions were incorporated in the 1985 survey to ensure that all respondents were less than 65 years old, were operating a farm, considered farming to be their primary occupation, and sold at least \$2,500 of farm products in 1984. Comparison of the 1988 survey data with data from the 1985 and 1986 surveys and with data from the 1982 Census of Agriculture indicated that the 1988 panel was still representative of the state's farmers.

This report is organized into six parts that discuss (1) changes in the farm operation and family situation of respondents, (2) the financial situation of the farm operators, (3) changes in farm management practices brought about by the economic environment of the past few years, (4) off-farm work by farm operators and their spouses, (5) the effects of economic stress on the personal lives of farm and ranch families, and (6) the outlook of the respondents concerning the future of their farming operation. Key findings are as follows:

- Gross farm income in 1987 was about 7 percent higher than in 1985, reflecting relatively favorable crop yields, improved livestock prices, and substantial government farm program payments. These conditions were also reflected in improved net farm income, which increased 22 percent over its 1985 level. Only 10 percent of the respondents reported zero or negative net farm income in 1987 compared to 23.4 percent in 1985.
- Producers reduced their debt slightly between 1985 and 1987; however, asset values also declined. The average debt-to-asset ratio increased from 0.42 in 1985 to 0.44 in 1987, and the average net worth fell by almost \$10,000. Most of this decrease was probably due to falling land values, which appeared to bottom out during 1987.
- The percentage of producers in the highest two debt levels has been steadily rising over the past few years from 14 percent in 1985 to almost 20 percent in 1988, primarily because asset values have been falling.
- Producers in the very highly leveraged categories (over 70 percent debt) represented about 20 percent of the sample but accounted for more than 42 percent of all farm debt, compared to about 38 percent two years earlier.
- Many North Dakota producers depend on government farm program payments. In 1987, the average producer received almost \$22,000 in program payments, and two-thirds received payments of \$10,000 or more.

- *Among the operators, 22 percent reported some off-farm work in 1987, compared to 23 percent in 1985. Among spouses, however, off-farm work had increased; about 40 percent worked off the farm in 1987, compared to 35 percent in 1985. Counties with more diversified (less agriculturally dependent) economies had a higher percentage of farm operators employed off the farm.*
- *Eight percent of the farm operators and 6.4 percent of the spouses who are not already working off the farm planned to look for off-farm work in 1988. They would typically be willing to commute about 20 miles to these jobs, and more than half would accept an hourly wage of \$5.00 or less. The propensity to seek off-farm work is greater for both operators and spouses in highly leveraged situations.*
- *Producers' attitudes about the effects of the farm financial situation were improved in the spring of 1988 compared to two years before. Only 17 percent said the financial situation has had a great deal of effect on their personal lives, compared to 30 percent in 1986. Operators reported a lower level of depression and emotional problems and a lower incidence of marital or family stress or conflict. The frequency with which most of the other stressful events were reported was also somewhat lower in 1988.*

OUTLOOK OF NORTH DAKOTA FARM HOUSEHOLDS:  
RESULTS OF THE 1988 LONGITUDINAL FARM SURVEY

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Financial problems of farmers appeared to have improved somewhat in 1987 and early 1988 compared to the crisis dimensions observed in the 1984-86 period. At the national level a record net farm income in 1987 and indications that land values had bottomed out were viewed as positive signals. At the same time, cost and return relationships for many major crop and livestock enterprises suggested that many highly leveraged operators were still experiencing negative returns to equity and continued to be vulnerable to financial stress (Murdock and Leistritz 1988). To determine the financial condition of North Dakota producers and provide state and national policymakers with accurate financial and socioeconomic information, the Department of Agricultural Economics at North Dakota State University, the NDSU Extension Service, and the U.S. Department of Agriculture joined in 1985 to conduct one of the first longitudinal studies of farm operators in the 1980s.

Study Procedures

This report is a comprehensive analysis of results from a March 1988 telephone survey of 557 farm operators who had been previously contacted in 1985 and 1986. In 1985, 933 producers provided information concerning their 1984 socioeconomic characteristics, such as their farm financial information, off-farm employment history, and trade patterns (Leholm et al. 1985). Initial screening questions were incorporated in the 1985 survey to ensure that all respondents were less than 65 years old, were operating a farm, considered farming to be their primary occupation, and sold at least \$2,500 of farm products in 1984. Attempts were made in the 1986 survey to contact all 933 members of the original panel. Of these, 759 responded, 99 refused to participate, 18 had ceased to operate a farm or ranch, 4 were deceased, and 53 could not be contacted (Leistritz et al. 1987).

In the March 1988 survey, attempts were made to contact all 759 producers who had responded in 1986. Of this group, 557 provided complete information, 109 refused to participate (including 2 who had retired), 38 had ceased to operate a farm or ranch, 7 were deceased, and 51 could not be contacted. The 557 who were still farming and who had completed useable questionnaires constitute the data base for this report.

Selected characteristics of respondents to the 1988 survey were compared with data from the 1985 and 1986 surveys and with North Dakota data from the 1982 Census of Agriculture to determine representativeness. The distribution of farms by state planning region (see Figure 1) compares quite closely with both the 1985 survey and the 1982 census count for farms whose operators reported farming as their principal occupation (Table 1). The age distributions are also quite similar among the three surveys and the census

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except that the surveys included slightly smaller percentages of operators under age 25. A probable explanation for this difference is that difficult economic conditions have discouraged young people from entering farming in the last few years. (Also, it should be noted that producers who started farming since 1984 were excluded from the panel.)

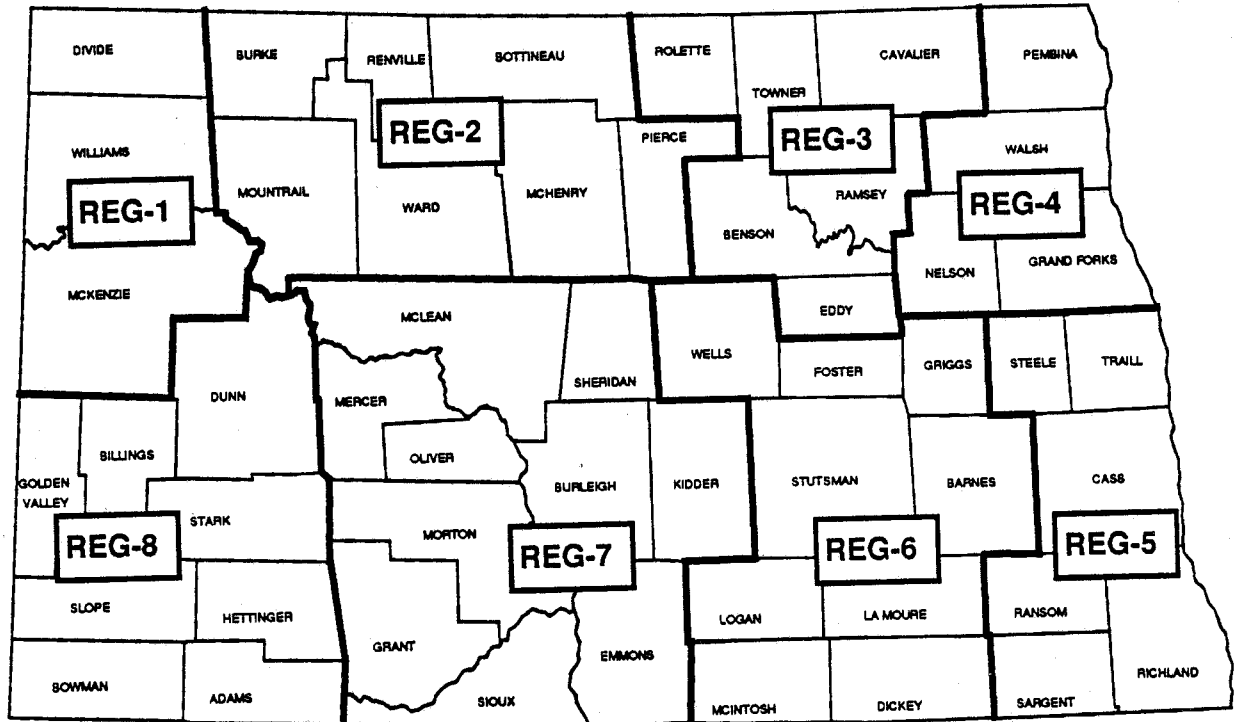


Figure 1. The Eight State Planning Regions in North Dakota

Comparison of the distributions of acres operated reveals that the three survey distributions are similar but that all three surveys included a smaller percentage of small farms (less than 500 acres operated) than are represented in the census. A likely explanation is that many of these smaller units are operated by individuals (excluded from the survey) over 65 years of age or who do not consider farming to be their principal occupation. This would also explain the higher percentage of survey farms in the two largest size classes.

This report is organized into six parts. First, changes in the farm operation and family situation of respondents are briefly described. Second, the financial situation of the farm operators is examined in detail, and results are compared with those from the 1985 and 1986 surveys. Third, changes in farm management practices brought about by the economic environment of the past few years are discussed. In the fourth section, off-farm work by farm operators and their spouses is analyzed. The fifth section summarizes the effects of economic stress on the personal lives of farm and ranch families. Finally, the outlook of the respondents concerning the future of their farming operation is discussed.

TABLE 1. DISTRIBUTIONS OF NORTH DAKOTA FARMS BY STATE PLANNING REGION, ACRES OPERATED, AND AGE OF OPERATOR FROM 1982 CENSUS OF AGRICULTURE, AND THE 1985, 1986, AND 1988 FARM OPERATOR SURVEYS

Item	1982 Census	1985 Survey	1986 Survey	1988 Survey
-----percent-----				
<b>Region:<sup>a</sup></b>				
1	6.2	4.9	5.0	3.6
2	14.9	15.1	14.9	13.6
3	11.0	10.9	10.4	10.4
4	9.7	9.8	9.0	8.1
5	13.4	13.2	13.4	13.8
6	17.8	17.9	17.9	17.8
7	17.4	17.9	18.3	20.5
8	9.7	10.3	11.1	12.2
<b>Age:<sup>a</sup></b>				
Less than 25	6.2	2.8	2.6	0.0
25 to 34	20.1	20.5	19.2	13.9
35 to 44	20.2	23.4	24.8	24.2
45 to 54	24.9	25.7	24.1	22.2
55 to 64 <sup>b</sup>	28.7	27.6	29.2	39.6
<b>Acres operated:<sup>c</sup></b>				
Less than 180	7.8	1.3	2.0	1.6
180 to 499	14.6	8.3	8.8	8.3
500 to 999	28.9	25.8	25.6	27.0
1,000 to 1,999	33.3	39.4	41.3	41.7
2,000 or more	15.5	25.2	21.9	21.4

<sup>a</sup>Includes only farms whose operator reported farming as principal occupation. Source: U.S. Bureau of the Census 1982.

<sup>b</sup>For the 1986 survey, this includes 10 operators (1.3 percent) who were 65 years old at the time of the survey, and for the 1988 survey it includes 51 (9.2 percent) who were 65 and over.

<sup>c</sup>Includes only farms whose operator reported farming as principal occupation and whose operator's age was less than 65.

### Farm and Family Characteristics

Selected characteristics of survey respondents and their families are shown in Table 2. Most of the operators were married (88 percent), lived in households of two to four persons, and had not changed their residence since 1986. In general, characteristics reported by the operators in 1988 were quite similar to those from the 1986 survey.

TABLE 2. FAMILY CHARACTERISTICS OF SURVEY RESPONDENTS, 1986 AND 1988

Item	Unit	1986	1988
<b>Marital status:</b>			
Single	Percent	10.7	8.7
Married	Percent	87.2	88.4
Separated or divorced	Percent	1.3	1.8
Widowed	Percent	0.7	1.1
<b>Number of persons living at residence:</b>			
Mean	Number	3.5	3.4
<b>Distribution:</b>			
1	Percent	4.4	5.2
2	Percent	26.6	28.9
3	Percent	21.3	23.3
4	Percent	23.7	21.2
5 or more	Percent	24.0	21.4
<b>Number under age 19:</b>			
Mean	Number	1.3	1.2
<b>Number under age 5:</b>			
Mean	Number	0.3	0.2
<b>Residence in 1988:</b>			
Same as 1986	Percent	NA	96.4
Different than 1986	Percent	NA	3.6

NA = not available.

Information regarding the respondents' farm operations is summarized in Table 3. The farm and ranch operators reported a slight increase in acres owned and a small decrease in acres rented from others. Overall, the average number of acres operated increased slightly (about 2 percent) over the two-year period. Farms were also classified by their major source of income. Fifty-nine percent of the respondents indicated that more than 50 percent of their income came from crops (down from 68 percent in 1986), and 24.5 percent said that livestock provided the majority of their income (up from 19.8 percent in 1986). This pattern is consistent with the relatively strong cattle and hog prices that prevailed in 1987.

Almost one in six (15.5 percent) of the operators had entered land into the Conservation Reserve Program (CRP). Most had enrolled their land in 1987 (76 percent), and the average acreage enrolled was about 210 acres.

TABLE 3. FARM CHARACTERISTICS OF SURVEY RESPONDENTS, 1986 AND 1988

Item	Unit	1986 <sup>a</sup>	1988
Acres owned (mean) <sup>b</sup>	Number	770.7	800.7
Acres rented to others (mean) <sup>b</sup>	Number	23.0	36.3
Acres rented from others (mean) <sup>b</sup>	Number	804.0	788.1
Total acres operated (mean) <sup>b</sup>	Number	1,551.6	1,585.0
Enterprises that provided 50 percent or more of gross income:			
Crops	Percent	67.8	59.0
Livestock	Percent	19.8	24.5
Neither	Percent	12.4	16.4
Has land owned or operated been entered into CRP?			
Yes	Percent	NA	15.5
No	Percent	NA	84.3
Don't know	Percent	NA	0.2
Year land was entered into CRP:			
1986	Percent	NA	3.6
1987	Percent	NA	76.2
1988	Percent	NA	20.2
Number of acres enrolled:			
Mean	Number	NA	209.7
Distribution:			
0-99	Percent	NA	29.4
100-199	Percent	NA	33.0
200-499	Percent	NA	29.4
500 or more	Percent	NA	8.2

<sup>a</sup>Values for 1986 are for those respondents who provided information for both years.

<sup>b</sup>Average (mean) values are computed for all respondents, including those who did not own (or rent) any land.

NA = not available.

Farm Financial Characteristics

Selected financial indicators of the survey respondents are summarized in Table 4. The data in this table reflect responses of producers who provided information in both 1986 and 1988. The income and expense items in Table 4 reflect the producers' experience in the years prior to the survey, that is, 1985 and 1987.

TABLE 4. SELECTED INCOME AND EXPENSE ITEMS FOR NORTH DAKOTA FARM AND RANCH OPERATORS

Item	Unit	1985	1987
<b>Gross farm income:</b>			
Mean	Dollars	107,413	114,899
Median	Dollars	76,004	80,000
<b>Distribution:</b>			
Less than \$40,000	Percent	21.1	20.8
\$40,000 - \$99,999	Percent	42.2	43.1
\$100,000 - \$249,999	Percent	30.2	26.7
\$250,000 - \$499,999	Percent	4.5	7.0
\$500,000 or more	Percent	1.9	2.4
<b>Depreciation expense:</b>			
Mean	Dollars	15,487	18,080
Median	Dollars	11,000	10,986
<b>Distribution:</b>			
Less than \$5,000	Percent	19.2	28.2
\$5,000 to \$9,999	Percent	23.5	19.5
\$10,000 to \$19,999	Percent	26.7	24.8
\$20,000 to \$29,999	Percent	16.7	13.3
\$30,000 or more	Percent	13.9	14.0
<b>Interest expense:</b>			
Mean	Dollars	14,128	12,042
Median	Dollars	9,000	6,958
<b>Distribution:</b>			
None	Percent	11.2	13.3
\$1 to \$4,999	Percent	24.6	31.9
\$5,000 to \$9,999	Percent	16.4	18.1
\$10,000 to \$19,999	Percent	23.8	19.7
\$20,000 or more	Percent	24.0	17.0

- CONTINUED -



TABLE 4. SELECTED INCOME AND EXPENSE ITEMS FOR NORTH DAKOTA FARM AND RANCH OPERATORS (CONTINUED)

Item	Unit	1985	1987
Government farm program payments:			
Mean	Dollars	NA	21,919
Median	Dollars	NA	16,000
Distribution:			
Less than \$5,000	Percent	NA	16.7
\$5,000 to \$9,999	Percent	NA	16.3
\$10,000 to \$19,999	Percent	NA	27.9
\$20,000 to \$29,999	Percent	NA	17.8
\$30,000 or more	Percent	NA	21.3
Net cash farm income:			
Mean	Dollars	17,034	20,751
Median	Dollars	10,000	15,000
Distribution:			
Zero or negative	Percent	23.4	10.0
\$1 to \$4,999	Percent	9.6	10.4
\$5,000 to \$9,999	Percent	13.0	16.8
\$10,000 to \$24,999	Percent	33.6	36.4
\$25,000 or more	Percent	20.4	26.4
Return on assets:			
Mean	Percent	5.0	5.0
Median	Percent	3.7	5.0
Distribution:			
Negative	Percent	24.7	16.1
0.01 to 4.0	Percent	27.1	26.6
4.01 to 9.99	Percent	27.6	31.8
10.00 or more	Percent	20.6	25.5
Return on equity <sup>a</sup>			
Mean	Percent	0.0	-3.0
Median	Percent	0.4	2.6
Distribution:			
Negative	Percent	48.4	34.2
0.01 to 4.0	Percent	19.2	24.0
4.01 to 9.99	Percent	17.4	19.7
10.00 or more	Percent	15.0	22.0

- CONTINUED -

TABLE 4. SELECTED INCOME AND EXPENSE ITEMS FOR NORTH DAKOTA FARM AND RANCH OPERATORS, (CONTINUED)

Item	Unit	1985	1987
Total family income less estimated family living expenses and principal payments:			
Mean	Dollars	3,686	6,140
Median	Dollars	-1,112	2,603
Distribution:			
Negative	Percent	52.6	44.6
0 to \$4,999	Percent	9.3	11.5
\$5,000 to \$19,999	Percent	17.4	22.6
\$20,000 or more	Percent	20.7	21.3
Total family income less estimated family living expenses:			
Mean	Dollars	15,462	18,113
Median	Dollars	5,297	10,399
Distribution:			
Negative	Percent	36.1	23.3
\$0 to \$4,999	Percent	12.5	14.2
\$5,000 to \$19,999	Percent	24.0	29.6
\$20,000 or more	Percent	27.4	32.2
Total family income plus depreciation less estimated family living expenses:			
Mean	Dollars	31,193	36,913
Median	Dollars	18,497	23,321
Distribution:			
Less than 0	Percent	12.6	8.4
0 to \$4,999	Percent	9.7	7.4
\$5,000 to \$9,999	Percent	9.5	8.6
\$10,000 to \$14,999	Percent	10.8	10.5
\$15,000 to \$19,999	Percent	10.3	9.5
\$20,000 to \$24,999	Percent	8.1	8.1
\$25,000 to \$29,999	Percent	5.3	7.2
\$30,000 and over	Percent	33.7	40.2

<sup>a</sup>Excludes operators who reported negative equity.

NA = not available.

Gross farm income in 1987 was about 7 percent higher than in 1985, reflecting relatively favorable crop yields, improved livestock prices, and substantial government farm program payments. These conditions were also reflected in improved net farm income, which increased 22 percent over its 1985 level. Most areas of the state had an increase in net farm income with the greatest gains occurring in the northwest corner of the state, which had suffered a severe drought in 1985 (Figure 2). The highest regional average net cash farm income continued to be found in the southern Red River Valley. (For more detailed information about levels of net farm income and gross farm income by region, see Appendix Table 1.) The distribution of net farm income in 1987 also indicates the improvement of some producers' situations. In particular, only 10 percent of the respondents reported zero or negative net farm income in 1987 compared to 23.4 percent in 1985.

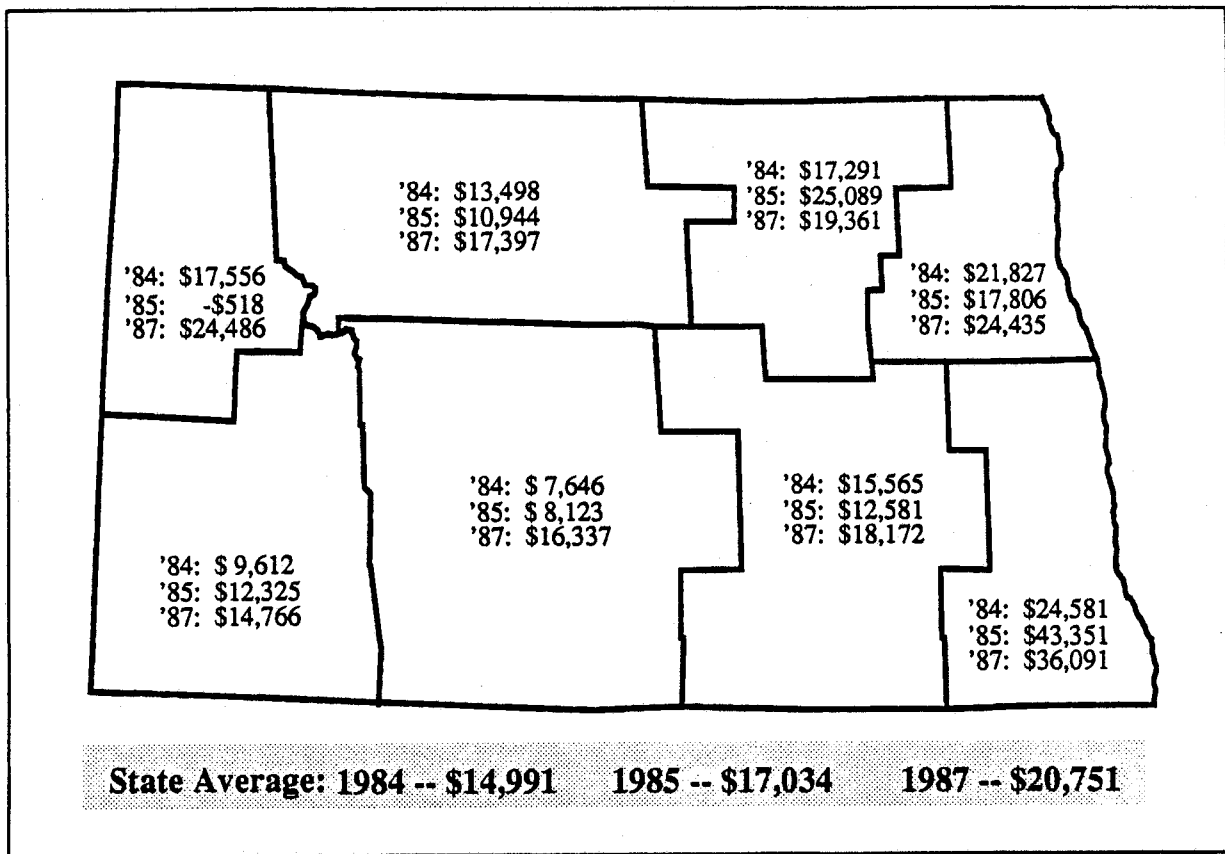


Figure 2. Regional Average Net Cash Farm Income in North Dakota, 1984, 1985, and 1987

Net cash farm income was by far the largest component (nearly 70 percent) of North Dakota farm families' total income, but earnings from nonfarm employment also represented a substantial component (19 percent). Although the percentage of total income represented by earnings from off-farm work declined, the actual magnitude of those earnings increased slightly from the 1985 level (Table 5). Mineral lease income, once quite substantial for some operators in western North Dakota, had become a relatively minor income source for most in 1987. Only 11 percent of operators surveyed reported receiving such payments in 1987; their payments averaged \$3,451.

TABLE 5. COMPOSITION OF FARM FAMILY INCOME, NORTH DAKOTA, 1984, 1985, AND 1987

Item	1984	1985	1987
	-----percent of total-----		
Net cash farm income	60.5	63.3	69.7
Earnings from off-farm employment	18.4	21.1	19.4
Mineral lease income	10.3	4.3	1.4
Other off-farm income	10.8	11.3	9.5
Total farm family income	\$23,703	\$25,380	\$28,408

Respondents also provided information about the value of their assets and debts as of December 31, 1987. Producers reduced their debt slightly between 1985 and 1987 (Table 6). However, asset values also declined during this period, so the average debt-to-asset ratio increased from 0.42 in 1985 to 0.44 in 1987, and the average net worth fell by almost \$10,000. Most of this decrease was probably due to falling land values, which appeared to bottom out during 1987. Average values for assets, debt, and other variables can be substantially affected by a few respondents with very large operations. Thus, median (or midpoint) values are also presented in the table and better reflect the situation of the typical producer.

The distribution of debt-to-asset ratio values is shown in Table 7. The percentage of producers in the highest two debt levels has been steadily rising over the past few years from 14 percent in 1985 to almost 20 percent in 1988, primarily because asset values have been falling. Producers with such debt levels have experienced substantial financial stress under the economic conditions of the 1980s and may be particularly vulnerable if their income is reduced as a result of the drought of 1988.

TABLE 6. TOTAL ASSETS, DEBT, NET WORTH, AND DEBT-TO-ASSET RATIO OF NORTH DAKOTA FARMERS, DECEMBER 31, 1984, 1985, AND 1987

Item	Average	Median	Item	Average	Median
-----dollars-----			-----dollars-----		
<b>Total assets:</b>			<b>Net Worth:</b>		
1984	415,756	300,000	1984	280,697	200,000
1985	387,619	280,000	1985	250,535	160,000
1987	375,514	250,000	1987	240,957	160,000
<b>Total debt:</b>			<b>Debt-to-asset ratio:</b>		
			-----number-----		
1984	134,230	75,000	1984	.35	.30
1985	133,008	80,000	1985	.42	.29
1987	132,008	75,000	1987	.44	.31

TABLE 7. DEBT-TO-ASSET RATIOS OF NORTH DAKOTA FARM OPERATORS, DECEMBER 31, 1984, 1985, AND 1987

Item	1984	1985	1987
-----percent-----			
No debt	15.9	16.9	16.0
0.01 to 0.40	45.8	43.4	42.8
0.41 to 0.70	23.8	22.8	21.3
0.71 to 1.00	12.0	11.6	13.5
More than 1.00	2.4	5.3	6.4

The fact that highly leveraged producers are likely to experience financial stress is illustrated by Appendix Table 2. Of the producers with no debt, only 6 percent had a zero or negative net cash farm income whereas 22 percent of the group with debt-to-asset ratios over 0.7 had net cash farm incomes in this range.

The relationship between the age of the operators and their leverage position and net income are shown in Appendix Table 3. Among operators less than age 35, 56 percent had debt-to-asset ratios over 0.4, while only 21 percent of the operators over age 55 had ratios of this magnitude. The relationship between age and net income is not pronounced, however.

Average regional debt-to-asset ratios (Figure 3) show that four regions exhibited decreases in the ratio and four had increases. The south central region again had the highest ratio (over 0.54) followed by the north central region at 0.51.

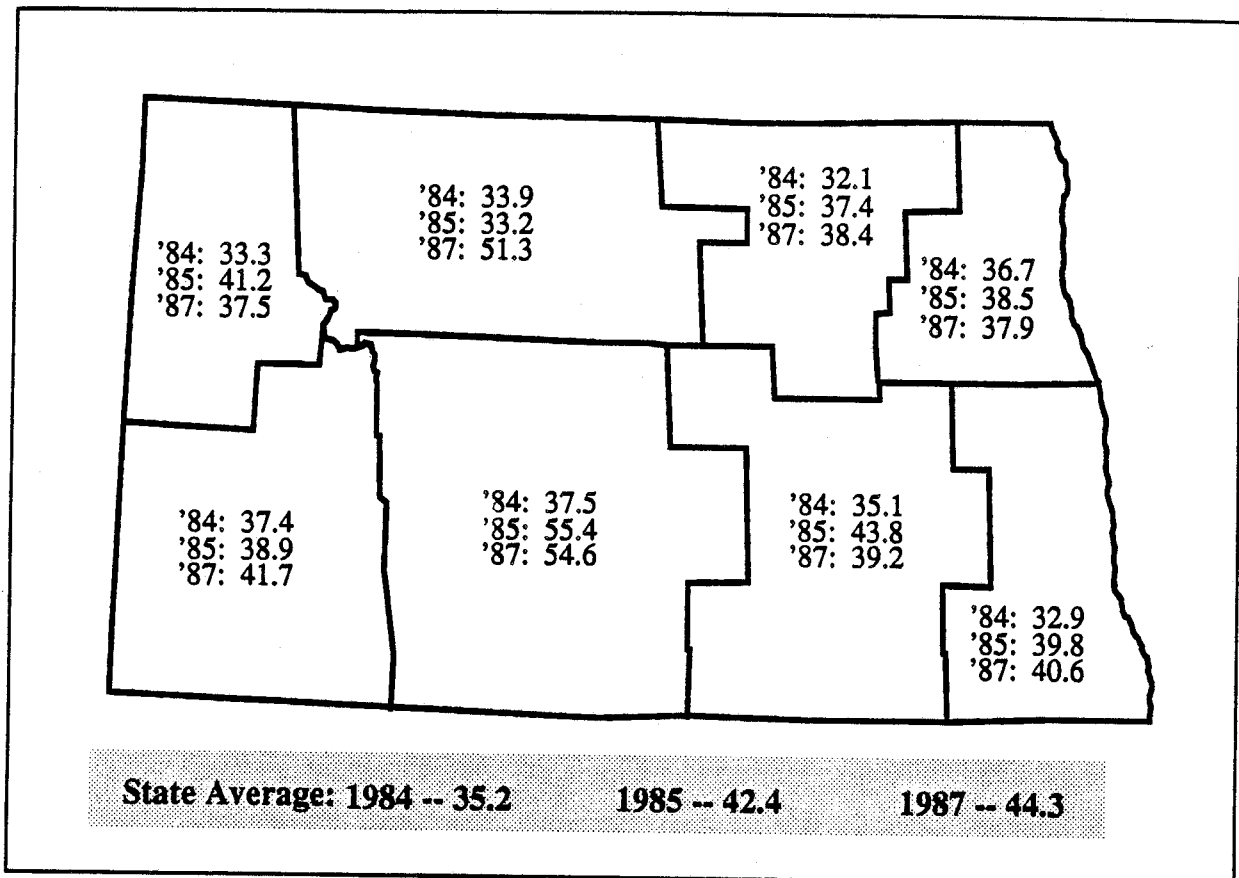


Figure 3. Regional Average Debt-to-Asset Ratio of North Dakota Farmers as of December 31, 1984, 1985, and 1987

The survey information also indicates the extent to which lenders are at risk because of the difficult economic conditions in the agricultural sector and the distribution of farm debt and assets. As of December 31, 1987, producers with debt-to-asset ratios over 1.0 held 19.4 percent of the total debt reported by the panel, while those with debt-to-asset ratios in the range of 0.7 to 1.0 held another 22.7 percent (Appendix Table 4). Thus, producers in these very highly leveraged categories accounted for more than 42 percent of all farm debt, compared to about 38 percent two years earlier.

Information in Table 4 points out the dependence of many North Dakota producers on government farm program payments. In 1987, the average producer received almost \$22,000 in program payments, and two-thirds received payments of \$10,000 or more. Clearly, reductions in program payments would have a major impact on many producers' incomes.

Depreciation expenses reported by respondents for 1987 were somewhat higher on average than those for 1985, perhaps indicating that some producers had upgraded their machinery in the interim (Table 4). The median values were virtually identical between the two years.

Interest expenses were significantly lower in 1987. This could reflect lower interest rates, since debt levels had been reduced very little (Table 4). It could also reflect the effect of larger advanced deficiency payments and increased set-aside requirements, both of which would reduce requirements for operating capital. About 37 percent of the respondents reported interest payments of \$10,000 or more for 1987, compared to 48 percent for 1985.

Two key indicators of the performance of a farm or ranch business are the rate of return to farm assets (capital) and the rate of return to farm equity (net worth). Return to assets is the net income derived from the use of both owned and borrowed assets. It is computed by adding interest paid to net cash farm income and subtracting an allowance for unpaid family labor and management.<sup>1</sup> The rate of return is determined by dividing this dollar amount by the total capital invested in the business at the beginning of the year. Because the cost of borrowed capital (interest) is added to net cash farm income to calculate return to capital, this ratio is an acceptable indicator of business efficiency but is not a good indicator of financial stress.

The average return on assets for producers in 1987 was 5 percent, identical to that reported for 1985 (Table 4). The median value was up substantially, however, and only 16 percent of producers reported negative returns to assets, compared to almost 25 percent in 1985.

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<sup>1</sup>The poverty income level threshold was used as a proxy for unpaid family labor and management. It is a conservative estimate of family living expenses based on size of household and is determined by the Bureau of Labor Statistics, U.S. Department of Labor (Weinberg 1985).

Rate of return to equity is used to evaluate the return an operator is receiving on his own capital and is a relative measure of financial stress. The absolute size of the ratio roughly measures the rate at which a farm business is adding to or consuming its own capital stock. It is computed by subtracting a family living allowance<sup>2</sup> (a proxy for unpaid family labor and management) from net cash farm income and dividing by owner equity (assets minus liabilities).

The median value for return on owner equity improved in 1987, although the mean value fell (Table 4). The percentage of producers who had negative returns to equity improved considerably, from 48 percent in 1985 to 34 percent in 1987. As in previous years, the most highly leveraged operators had negative returns to equity. Returns averaged a negative 10.6 percent for operators with debt ratios of 0.7 to 1.0, compared to 3.6 percent for less heavily indebted producers.

Three additional measures of the economic viability of farm households are shown in Table 4. The first is created by summing total family income from all sources and subtracting an estimate of minimal family living expenses and an estimate of principal payments due to lenders. Farm households that do not have sufficient income to meet these needs are likely to face difficulties, at least in the long-run (Salant et al. 1986; Leistriz and Ekstrom 1988). This financial measure showed improvement from 1985 to 1987 as the percentage of households without sufficient income to cover family living expenses and principal payments fell from 52.6 percent in 1985 to 44.6 percent in 1987. At the same time, however, this measure indicates that a substantial percentage of farms still face financial problems.

The second measure is total family income less family living expenses. In 1987, about 23 percent of the respondents had total family incomes that were insufficient to cover family living expenses compared to 36 percent in 1985.

To assess the short-run cash flow situation for operators in 1987, a third measure was created. The depreciation charge was added to total family income to obtain an estimate of total cash available, and then estimated family living expenses were subtracted. This analysis reflects the fact that capital replacement (depreciation) charges can sometimes be deferred for several years and do not always impose an immediate demand for cash outlays and that part or all of a household's principal payments can sometimes be deferred through special arrangements with creditors. As indicated in Table 4, only 8.4 percent of North Dakota farm families were unable to meet these short-run cash flow requirements in 1987, compared to 12.6 percent in 1985. (It should be noted that this analysis, like the preceding analysis of long-run viability, was somewhat optimistic in that it did not consider income taxes and social security taxes as a demand for cash outlays.)

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<sup>2</sup>The poverty income threshold was used as the estimate of family living expenses. Principal payment obligations were estimated by taking 5 percent of the value of long-term debt and 20 percent of the value of intermediate-term loans.



Another indicator of the ability of producers to meet financial obligations is the percent who are current on all debt payments (Watt et al. 1986; Mortensen et al. 1987). Producers with debt were asked this question on both the 1986 and 1988 surveys. In 1988, only 12.8 percent of the producers with debt reported that they were not current, compared to 20.7 percent in 1986.

#### Farm Management Changes

Farm operators were asked if they had made specific changes in their farming operation in the last two years that would not normally have been made in a typical year. Responses to this question are summarized in Figure 4. Adjustments mentioned most frequently were postponing capital purchases, reducing tillage operations, and reducing family living expenses. In general, the adjustments undertaken by producers in 1986 and 1987 were similar to those undertaken in 1985 (Leistritz et al. 1987).

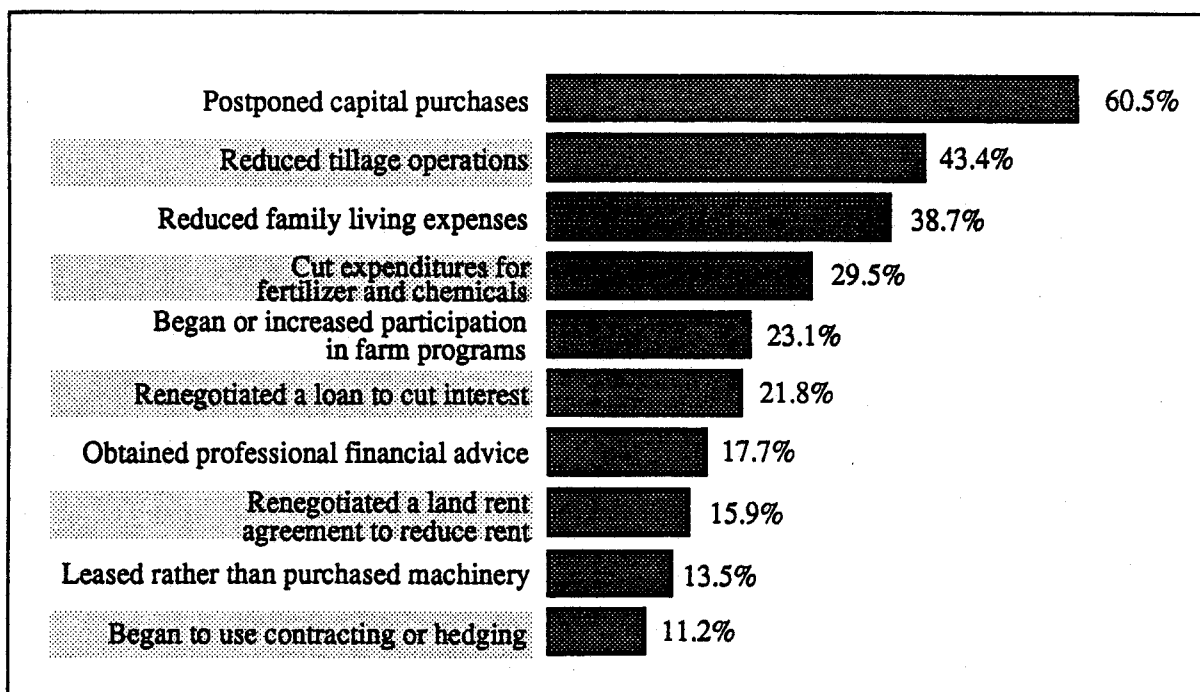


Figure 4. Management Adjustments Made by North Dakota Farmers, 1986 and 1987

The relationship between producers' debt position and the frequency with which selected changes are reported is summarized in Table 8. Generally, the more heavily indebted producers were most likely to initiate changes.

TABLE 8. PERCENT OF NORTH DAKOTA FARM OPERATORS MAKING SPECIFIC CHANGES IN 1986 AND/OR 1987 ACCORDING TO THEIR LEVEL OF DEBT

Specific Change	Operators Responding to the Specific Change		Operators Making the Specific Change							
			No Debt		1% to 40% Debt		41% to 70% Debt		Over 70% Debt	
	N	%	N	%	N	%	N	%	N	%
Renegotiated a loan or land contract to reduce interest <sup>b</sup>	118	21.3	a	0.9	24	21.1	37	32.5	52	45.6
Renegotiated a land rental agreement to reduce land rents <sup>b</sup>	88	15.9	7	8.1	33	38.4	23	26.7	23	26.8
Switched from cash to share rent	19	3.4	a	11.1	6	33.3	7	38.9	a	16.7
Changed lending institutions <sup>b</sup>	57	10.3	a	5.6	16	29.6	15	27.8	20	37.0
Began to use contracting or hedging as marketing tools	62	11.2	5	8.5	22	37.3	19	32.2	13	22.0
Began to use crop insurance <sup>b</sup>	62	11.2	6	10.2	26	44.0	14	23.7	13	22.1
Quit using crop insurance	24	4.3	a	12.5	5	20.8	7	29.2	9	37.5
Obtained professional financial advice <sup>b</sup>	98	17.7	a	4.2	34	35.8	22	23.2	35	36.8
Leased machinery rather than purchased <sup>b</sup>	75	13.5	a	2.9	32	45.7	19	27.1	17	24.3
Reduced family living expenses <sup>b</sup>	215	38.7	11	5.6	77	39.1	49	24.8	60	30.5
Postponed capital purchases <sup>b</sup>	336	60.5	27	8.5	120	38.0	85	26.9	84	26.6
Started participating in government farm programs <sup>b</sup>	56	10.1	9	17.0	19	35.8	10	18.9	15	28.3
Increased participation in farm programs <sup>b</sup>	72	13.0	6	8.7	27	39.1	18	26.1	18	26.1
Cut back on expenditures, for fertilizer and chemicals <sup>b</sup>	164	29.5	13	8.6	53	35.1	40	26.5	45	29.8
Reduced tillage operations <sup>b</sup>	241	43.4	22	9.9	93	41.7	56	25.1	52	23.3
No change	91	16.4	28	35.4	41	51.9	6	7.6	a	5.1
Percent of operators in debt category	--	--		16.0		42.8		21.3		19.9

<sup>a</sup>N < 5.<sup>b</sup>Significant differences among groups at the 1 percent (.01) level.

Producers were also asked about specific changes they had initiated during the past two years to reduce their farm debt. Responses to this question are summarized in Figure 5. The frequencies with which various adjustments were reported are similar to those found in the 1986 survey. However, because the time period covered by the 1988 question was two years (compared to one year in the 1986 study), it could be inferred that the financial pressures perceived by producers during the 1986-87 period were somewhat less than those experienced in 1985.

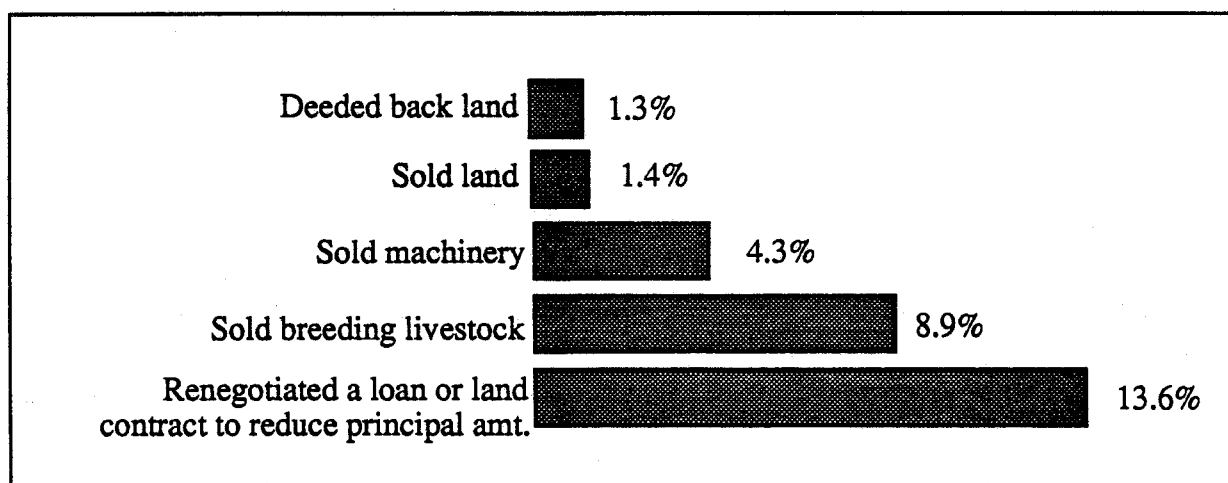


Figure 5. Management Changes Made to Reduce Farm Debt, North Dakota Farmers, 1986 and 1987

The frequency with which changes to reduce debt were reported are cross-tabulated with producers' debt-to-asset ratios in Table 9. In general, the frequency with which the producers reported making each of the specified changes was similar to those reported in 1986. The producers with debt-to-asset ratios over 0.4 accounted for a disproportionately large proportion of each class of change. Almost 25 percent of the respondents reported making one or more changes to reduce their debt.

In addition to asking what changes were made during the last two years (1986 and 1987), operators were asked what adjustments they planned to make in the coming year (1988) in order to improve their financial position. About 68 percent indicated they had no specific plans for changes. This compares to 56 percent who indicated no plans for changes in the 1986 survey. Of those who did plan changes, about 21 percent planned to refine their fertilizer and chemical program, almost 16 percent would try to reduce operating expenses, and about 10 percent would adopt minimum or no-till practices (Figure 6). In general, the adjustments mentioned most frequently were the same ones that were mentioned most often in the 1986 survey.

TABLE 9. PERCENT OF NORTH DAKOTA FARM OPERATORS MAKING SPECIFIC CHANGES TO REDUCE THEIR FARM DEBT, 1986 AND 1987

Specific Change	Operators Responding to the Specific Change		Operators Making the Specific Change							
			No Debt		1% to 40% Debt		41% to 70% Debt		Over 70% Debt	
	N	%	N	%	N	%	N	%	N	%
Sold land	8	1.6	0	0	2	25.0	4	50.0	2	25.0
Deeded back land	7	1.4	0	0	2	28.6	2	28.6	3	42.9
Sold machinery	24	4.7	0	0	5	20.8	8	33.3	11	45.3
Sold breeding livestock	46	8.9	2	4.4	19	41.3	8	17.4	17	37.0
Renegotiated a loan to reduce principal	71	13.9	0	0	16	22.5	24	33.8	31	43.7
Percent of operators in debt category		--		16.0		42.8		21.3		19.9

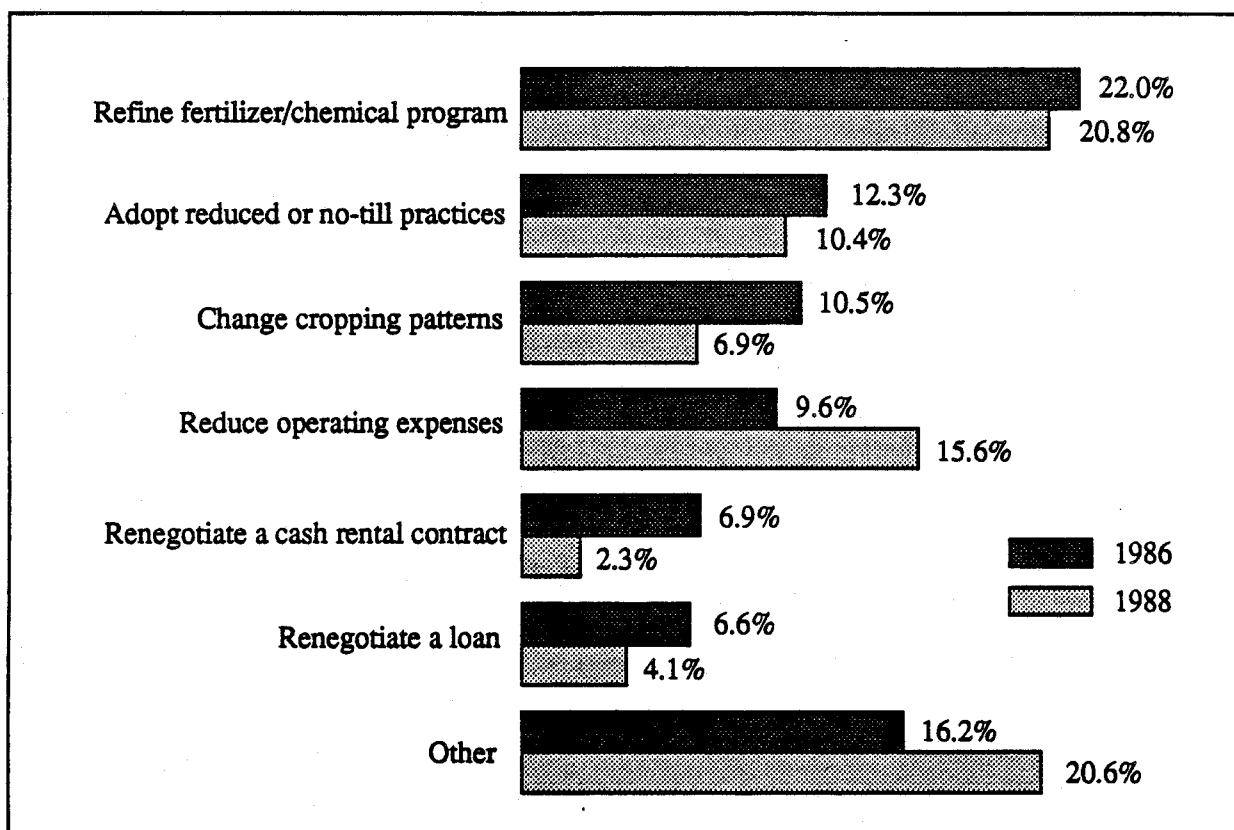


Figure 6. Planned Future Adjustments to Improve Financial Position, North Dakota Farmers

Off-Farm Employment

Another strategy that farm families may employ to cope with economic adversity is off-farm employment. Recent studies have indicated that off-farm employment is becoming a more important income source for many farm families and that farm households with high leverage ratios and/or inadequate incomes are more likely to seek off-farm work. (For example, see Spitze and Mahoney 1988; Saupe and Gould 1988; and Leistritz et al. 1986.)

In the 1988 survey both operators and spouses were asked whether they had worked off the farm in 1987. Among the operators, 116 of 538 (21.6 percent) reported some off-farm work in 1987, compared to 23.2 percent in 1985 (Table 10). Among spouses, however, off-farm work had increased; 39.5 percent worked off the farm in 1987, compared to 35.0 percent in 1985 (Table 10).

TABLE 10. OFF-FARM EMPLOYMENT IN 1985 AND 1987, NORTH DAKOTA FARM OPERATORS AND SPOUSES

Respondent Worked Off the Farm in 1985:	<u>Respondent Worked Off the Farm in 1987</u>		
	Yes	No	Total
Yes	83	42	125
Column percent	71.6	10.0	21.6
No	33	380	413
Column percent	28.4	90.0	78.4
Total	116	422	538
Column percent	100.0	100.0	100.0

Spouse Worked Off the Farm in 1985:	<u>Spouse Worked Off the Farm in 1987</u>		
	Yes	No	Total
Yes	142	22	164
Column percent	76.8	7.8	39.5
No	43	261	304
Column percent	23.2	92.2	60.5
Total	185	283	468
Column percent	100.0	100.0	100.0

Counties with more diversified (less agriculturally dependent) economies had a higher percentage of farm operators employed off the farm in 1987 (Table 11). Very little difference in the frequency of spouse employment off the farm appeared to exist between counties with different levels of agricultural dependence, however.

Younger and better educated operators and spouses were more likely to work off the farm (Table 11). For operators, the frequency of off-farm work declines steadily as age class increases. Among spouses, more than half were employed off the farm in both the less than 35 and the 35-44 age groups. For both operators and spouses, the frequency of off-farm work increased with education level; half of the spouses with post-secondary education worked off the farm.

TABLE 11. PERCENT OF FARM OPERATORS AND SPOUSES WHO WORKED OFF THE FARM IN 1987 BY COUNTY TYPE, AGE, EDUCATION, AND DEBT-TO-ASSET RATIO

Item	Work Off Farm	
	Operator	Spouse
	-----percent-----	
County type:		
Agriculture dependent	21.1	39.7
Agriculture important	17.3	40.3
Other	27.1	37.3
Age:		
Less than 35	31.6 <sup>a</sup>	55.7 <sup>a</sup>
35 - 44	28.4	54.1
45 - 54	23.6	34.3
55 or older	11.5	22.8
Education:		
Less than high school	12.6 <sup>b</sup>	20.0 <sup>a</sup>
High school graduate	19.7	30.1
Post-secondary school	25.7	50.0
Debt-to-asset ratio:		
No debt	16.1 <sup>b</sup>	28.8 <sup>a</sup>
0.01 to .40	17.1	32.3
.41 to .70	28.4	53.5
.71 and over	29.4	47.3

<sup>a</sup>Indicates relationship is significant by  $\chi^2$  test at 1% level.

<sup>b</sup>Indicates relationship is significant by  $\chi^2$  test at 5% level.

Among farm operators, the most frequent occupations were equipment operator and laborer positions, followed by the technician/sales/office work category, and by precision crafts (Table 12). Farmers commuted an average of 19 miles one-way to their off-farm jobs, slightly less than in 1985. The typical (median) worker had worked at his current job for about 7 years and worked 102 days off the farm in 1987. Both values are similar to those for 1985. The average value for gross earnings from off-farm work in 1987 was \$11,701. A few large values appear to have influenced the average substantially (the maximum value reported was \$85,000); the median value (\$7,250) is probably more indicative of the typical operator. The average hourly wage for operators was \$7.91; the median value was \$7.00. About 31 percent of the operators earned less than \$6.00 per hour, and 27 percent earned more than \$10.00. About 12 percent said they would look for a different off-farm job in 1988, and 64 percent of these would seek work in a different occupation than that of their present off-farm job.

TABLE 12. CHARACTERISTICS OF OFF-FARM EMPLOYMENT BY NORTH DAKOTA FARM OPERATORS, 1985 AND 1987

Item	Unit	1985	1987
Percentage who worked off the farm	Percent	23.2	21.1
Occupation of off-farm job:			
Professional/executive/administrative	Percent	19.8	17.4
Technician/sales/office	Percent	10.3	24.3
Service jobs	Percent	2.4	4.3
Precision crafts	Percent	23.8	20.0
Equipment operator/laborer	Percent	31.7	32.2
Work for farmer	Percent	11.9	1.7
Miles commuted to job:			
Mean	Miles	20.8	19.4
Median	Miles	11.0	12.0
Distribution:			
Less than 10	Percent	49.5	42.1
10 - 19.9	Percent	25.7	34.7
20 - 49.9	Percent	14.6	12.7
50 or more	Percent	10.2	10.5
Years worked at job:			
Mean	Number	8.3	9.3
Median	Number	6.0	7.0
Distribution:			
3 years or less	Percent	34.1	29.2
4 - 5 years	Percent	14.7	12.4
5 - 10 years	Percent	25.2	23.9
More than 10 years	Percent	26.0	34.5

- CONTINUED -

TABLE 12. CHARACTERISTICS OF OFF-FARM EMPLOYMENT BY NORTH DAKOTA FARM OPERATORS, 1985 AND 1987 (CONTINUED)

Item	Unit	1985	1987
Days worked off farm:			
Mean	Number	109.5	115.9
Median	Number	100.0	102.0
Distribution:			
Less than 50	Percent	30.3	34.5
50 to 99	Percent	18.9	11.0
100 to 200	Percent	33.6	39.0
More than 200	Percent	17.2	5.5
Gross earnings:			
Mean	Dollars	12,079	11,701
Median	Dollars	6,460	7,250
Distribution:			
Less than \$1,000	Percent	14.6	2.7
\$1,000 - \$4,999	Percent	25.2	34.8
\$5,000 - \$9,999	Percent	25.2	22.3
\$10,000 - \$19,999	Percent	12.2	17.9
More than \$20,000	Percent	22.8	22.3
Hourly wage rate:			
Mean	Dollars	NA	7.91
Median	Dollars	NA	7.00
Distribution:			
Less than \$5.00	Percent	NA	11.4
\$5.00 - \$5.99	Percent	NA	20.0
\$6.00 - \$6.99	Percent	NA	15.7
\$7.00 - \$7.99	Percent	NA	11.5
\$8.00 - \$9.99	Percent	NA	14.3
More than \$10.00	Percent	NA	27.1
Percent who plan to look for a different job next year			
Different occupation	Percent	8.8	12.3
Same occupation	Percent	72.7	64.3
	Percent	27.3	35.7

NA = not available.



The most commonly reported occupational category for the farm operators' spouses was as a technician, sales, or office worker, followed by service jobs (Table 13). They commuted an average of about 14 miles to their jobs and had worked for their present employer for almost 7 years. The spouses had worked an average of 148 days in 1987, and had earned an average of \$8,873 (median was \$7,000). Their hourly wage averaged \$6.53, and 31 percent earned less than \$5.00 per hour. About 7.9 percent planned to look for a different job in 1988.

TABLE 13. CHARACTERISTICS OF OFF-FARM EMPLOYMENT BY NORTH DAKOTA FARM SPOUSES, 1985 AND 1987

Item	Unit	1985	1987
Percentage who worked off the farm	Percent	35.2	39.5
Occupation of off-farm job:			
Professional/executive/administration	Percent	35.2	27.2
Technician/sales/office	Percent	38.2	38.2
Service jobs	Percent	21.8	29.3
Precision crafts	Percent	1.8	1.0
Equipment operator/laborer	Percent	3.0	4.2
Work for farmer	Percent	0.0	0.0
Miles commuted to job:			
Mean	Miles	14.0	13.8
Median	Miles	10.0	11.0
Distribution:			
Less than 10	Percent	50.7	43.9
10 - 19.9	Percent	27.5	29.4
20 - 49.9	Percent	20.6	25.1
50 or more	Percent	1.2	1.6
Years worked at job:			
Mean	Number	7.1	6.7
Median	Number	5.0	5.0
Distribution			
3 years or less	Percent	38.6	40.3
4 - 5 years	Percent	22.1	15.7
5 - 10 years	Percent	16.6	21.0
More than 10 years	Percent	22.7	23.0

- CONTINUED -

TABLE 13. CHARACTERISTICS OF OFF-FARM EMPLOYMENT BY NORTH DAKOTA FARM SPOUSES, 1985 AND 1987 (CONTINUED)

Item	Unit	1985	1987
Days worked off farm:			
Mean	Numbers	150.4	148.4
Median	Numbers	174.0	170.0
Distribution:			
Less than 50	Percent	19.1	22.4
50 to 99	Percent	11.1	10.9
100 to 200	Percent	32.1	33.4
More than 200	Percent	37.7	33.3
Gross earnings:			
Mean	Dollars	5,667	8,873
Median	Dollars	3,000	7,000
Distribution:			
Less than \$1,000	Percent	13.0	10.7
\$1,000 - \$4,999	Percent	24.7	29.7
\$5,000 - \$9,999	Percent	24.0	18.6
\$10,000 - \$19,999	Percent	32.7	33.1
More than \$20,000	Percent	5.6	7.9
Hourly wage rate:			
Mean	Dollars	NA	6.53
Median	Dollars	NA	6.00
Distribution:			
Less than \$5.00	Percent	NA	30.8
\$5.00 - \$5.99	Percent	NA	21.9
\$6.00 - \$6.99	Percent	NA	9.6
\$7.00 - \$7.99	Percent	NA	9.6
\$8.00 - \$9.99	Percent	NA	14.4
More than \$10.00	Percent	NA	13.7
Percent who plan to look for			
a different job next year	Percent	9.1	7.9
Different occupation	Percent	78.6	68.8
Same occupation	Percent	21.4	31.3

NA = not available.

The wage rates earned by farm operators and their spouses are compared with selected personal and community characteristics in Table 14. Comparison of average wage rates by county types indicates that respondents in agriculturally dependent counties had lower wage rates than those living in agriculturally important counties (less dependent on agriculture than the first group). Wage rates for both respondents and spouses were highest in the "other" county group; this group includes the state's larger cities. Wage

TABLE 14. MEAN HOURLY WAGE RATES RECEIVED BY NORTH DAKOTA FARM OPERATORS AND SPOUSES BY SELECTED CHARACTERISTICS

Item	Operator	Spouse
	-dollars per hour-	
County type:		
Agriculture dependent	7.20	6.52
Agriculture important	9.38	5.86
Other	9.50	7.70
Age:		
Less than 35	6.32	6.09
35 - 44	8.25	7.64
45 - 54	10.88	6.27
55 or older	5.91	5.17
Education:		
Less than high school	7.29	4.89
High school graduate	8.04	5.95
Postsecondary school	7.44	6.75
Days worked off the farm:		
Less than 50	6.59	6.09
51 to 100	6.92	5.90
101 to 200	8.18	6.85
Over 200	10.92	7.02
Years worked at job:		
Less than 2	5.90	5.30
2 to 5	9.20	5.70
6 to 10	8.00	7.50
More than 10	8.90	8.70
Plan to look for different job:		
Yes	7.20	5.30
No	8.20	6.80
Occupation types:		
Farm related	7.50	--
Professional/executive/administrative	10.50	8.60
Technician/sales/office	8.10	7.10
Service	5.50	4.60
Precision/craft/repair	8.70	8.50
Equipment operator/laborer	7.00	6.00

rates for operators increased with age until peaking in the 45-54 age group; spouses' wage rates peaked in the 35-44 age group. The relationship between education and wage rates was not pronounced for respondents; high school graduates received slightly higher wages than those with either less or more education. Spouses with postsecondary education received the highest wages.

For both groups, wages tended to increase as the number of days worked off the farm became larger and as the number of years worked at the job became larger. Workers who planned to look for a different job generally were lower paid than those who did not plan to look. Among occupational categories the professional, executive, and administrative jobs provided the best pay, and service jobs had the lowest average wage rates.

In order to examine the effect of selected personal and community attributes on wage rates, multiple regression analyses were performed for both operators and spouses. Explanatory variables considered were age, education, years worked at the present job, and the population of the largest town in the county. For operators, none of the explanatory variables were significant at the 15 percent level. For spouses, three of the explanatory variables were significant: years worked at the job, education, and city population. The final equation was

$$\text{Wage} = -0.086 + 0.144 \text{ years worked} + 0.899 \text{ education} + 0.00004 \text{ city pop.}$$

All explanatory variables were significant at the 1 percent level, and the equation explained 28 percent of the total variation of the dependent variable.

The interpretation of the coefficients is that for each year worked at the job, the average hourly wage increased \$0.14. Education was measured in five categories: eighth grade or less, some high school, high school graduate, some college or postsecondary school, and college graduate. Increasing education by one category raised the hourly wage by about \$0.90. Similarly, an increase in population of the largest city in the county by 10,000 would raise average wage levels by about \$0.40.

Gross earnings of farm operators and spouses are examined in Table 15. For operators, average earnings were greatest in the "other" county category, but the median earnings were greatest in the agriculture-important group. For spouses, mean earnings grew consistently as agricultural dependence decreased, and the differentials in median earnings were even greater. Operators enjoyed a steady increase in average gross earnings as age increased. Spouses' earnings, however, showed little pattern beyond age 35.

Gross earnings of operators were highest for those with a high school diploma but no postsecondary education. For spouses, high school graduates and those with postsecondary education had very similar levels of gross earnings. Because spouses with postsecondary education reported 13 percent higher wage rates, it can be inferred that this group worked fewer hours per year.

TABLE 15. GROSS EARNINGS FROM 1987 OFF-FARM EMPLOYMENT FOR FARM OPERATORS AND SPOUSES BY COUNTY TYPE, AGE, EDUCATION, DAYS WORKED, YEARS AT JOB, FUTURE PLANS, AND OCCUPATION TYPE

Item	Gross Off-Farm Earnings			
	Respondent		Spouse	
	Mean	Median	Mean	Median
	-----dollars-----			
County type:				
Agriculture dependent	11,333	7,000	8,499	6,450
Agriculture important	11,188	9,677	8,968	7,750
Other	12,985	8,000	10,497	10,000
Age:				
Less than 35	8,796	5,000	7,168	5,000
35 - 44	11,140	7,750	9,065	8,000
45 - 54	12,495	10,500	8,771	7,200
55 and over	14,672	5,000	9,207	6,500
Education:				
Less than high school	9,456	5,500	7,139	6,000
High school graduate	14,961	6,500	8,504	5,400
Postsecondary school	9,780	7,250	8,552	7,200
Days worked off farm:				
Less than 50 days	4,737	2,700	2,698	1,000
51 - 100 days	6,781	5,822	4,339	2,500
101 - 200 days	15,309	9,500	9,227	8,500
Over 200 days	21,425	18,250	4,347	15,000
Years worked at job:				
Less than 2 years	5,409	4,000	3,156	1,370
2 - 5 years	10,705	8,000	7,425	6,326
6 - 10 years	11,580	8,000	11,236	12,500
Over 10 years	16,638	10,000	15,252	16,000
Plan to look for different job:				
Yes	10,062	8,000	4,581	3,600
No	11,962	7,000	9,286	8,000
Occupation types:				
Farm related	7,000	7,000	--	--
Professional/executive/administrative	19,072	19,000	11,935	12,600
Technician/sales/office	14,253	7,500	9,689	8,000
Service	4,950	5,200	4,787	4,000
Precision/craft/repair	10,391	8,000	18,000	18,000
Equipment operator/laborer	7,520	5,000	5,942	4,650

As expected, earnings increased steadily with increases in days worked off the farm. Similarly, gross earnings increased steadily and substantially as the number of years worked at the job increased. Apparently persons with more years at their jobs not only received higher wage rates but also worked substantially more hours.

Among operators, those who planned to look for a different job had lower average earnings, but higher median earnings, than those who did not. For spouses, both mean and median earnings of those who planned to look were less than half of the earnings for those who did not.

Operators in the professional, executive, or administrative job categories had by far the highest earnings. Among spouses, the highest earnings were in the precision crafts or repair category. (The distributions of earnings for operators and spouses in the categories described above are shown in Appendix Table 5.)

Some farm operators and spouses who are not already working off the farm planned to look for off-farm work during the year (Tables 16 and 17). Almost 8 percent of the farm operators planned to look for off-farm work, compared to 11 percent in the 1986 survey. Most of these operators wanted full-time jobs (i.e., 40 hours per week), although some may have planned to work only seasonally at these jobs. They would typically be willing to commute about 20 miles to these jobs, and more than half would accept an hourly wage of \$5.00 or less.

Of the spouses, 6.4 percent planned to look for off-farm work. They would prefer a slightly shorter work week than the operators--an average of 29 hours per week with a median of 35 hours. Like the operators, they would be willing to commute about 20 miles. About 72 percent would accept a wage of \$5.00 per hour or less. The propensity to seek off-farm work is greater for both operators and spouses in highly leveraged situations (Appendix Table 6).

The mean wage levels that operators and spouses would accept are shown in Table 18 by selected characteristics. Among operators, the minimum acceptable wage tended to increase with age, while spouses showed the opposite pattern. Wage expectations increased with the level of educational attainment, and spouses with small children would require an average of \$0.80 more per hour than spouses without small children (operators with children would require \$1.40 per hour less than operators without children). The mean wages required by both operators and spouses varied considerably by occupational category. The variations were generally consistent with variations in wages actually received by farm household members employed in those occupations (see Table 14).

TABLE 16. PLANS OF NORTH DAKOTA FARM OPERATORS TO LOOK FOR OFF-FARM WORK DURING THE YEAR

Item	Unit	1988
Percent who will look for off-farm work	Percent	7.8
Educational level of farm operators who will look for off-farm work:		
Completed 8th grade only	Percent	8.8
Some high school	Percent	8.8
Completed high school	Percent	35.3
Attended college	Percent	32.4
Completed college	Percent	14.7
Hours per week:		
Mean	Hours	31.6
Median	Hours	40.0
Distribution:		
20 hours or less	Percent	29.0
21 to 36 hours	Percent	16.2
37 or more hours	Percent	54.8
Distance willing to commute:		
Mean	Miles	23.6
Median	Miles	20.0
Distribution:		
Less than 10 miles	Percent	9.7
10 to 20 miles	Percent	16.1
20 to 40 miles	Percent	64.5
More than 40 miles	Percent	9.7
Lowest acceptable hourly wage:		
Mean	Dollars	6.20
Median	Dollars	5.00
Distribution:		
Less than \$5.00	Percent	58.1
\$5.00 to \$10.00	Percent	35.4
\$10.00 or more	Percent	6.5

NA = not available.

TABLE 17. PLANS OF NORTH DAKOTA FARM SPOUSES TO LOOK FOR OFF-FARM WORK DURING THE YEAR

Item	Unit	1988
Percent who will look for off-farm work	Percent	6.4
Educational level of farm spouses who will look for off-farm work:		
Completed 8th grade only	Percent	--
Some high school	Percent	--
Completed high school	Percent	52.9
Attended college	Percent	41.2
Completed college	Percent	5.9
Hours per week:		
Mean	Hours	28.9
Median	Hours	35.0
Distribution:		
1 - 10 hours	Percent	15.8
11 - 20 hours	Percent	21.1
21 - 30 hours	Percent	5.3
31 - 40 hours	Percent	57.9
Distance willing to commute:		
Mean	Miles	22.0
Median	Miles	25.0
Distribution:		
1 - 10 miles	Percent	21.1
11 - 20 miles	Percent	26.3
21 - 30 miles	Percent	42.1
31 - 40 miles	Percent	5.3
More than 40 miles	Percent	5.3
Lowest acceptable hourly wage:		
Mean	Dollars	5.20
Median	Dollars	5.00
Distribution:		
Less than \$5.00	Percent	72.2
\$5.00 to \$7.50	Percent	16.7
\$7.51 to \$10.00	Percent	11.1

NA = not available.



TABLE 18. MEAN WAGE LEVELS FARM OPERATORS AND SPOUSES WILL ACCEPT BY SELECTED CHARACTERISTICS

Item	Operator	Spouse
	--dollars per hour--	
Age:		
Less than 35 years	5.10	6.00
35 - 44 years	5.10	5.50
45 - 54 years	7.20	4.40
55 years or older	8.70	5.00
Education:		
Less than high school	4.80	--
High school graduate	6.40	4.40
Postsecondary school	6.70	5.60
With children less than 5 years old:		
Yes	5.10	5.80
No	6.50	5.00
Occupation:		
Farm related	7.00	--
Professional/executive/administrative	8.00	6.00
Technician/sales/office	8.50	5.30
Service	5.00	4.50
Precision/craft/repair	5.10	--
Equipment operator/laborer	7.80	--

Effects of Economic Conditions on  
the Personal Lives of Farm Families

Farm and ranch operators were asked whether the current farm financial situation has had a great deal of effect, some effect, or no effect at all on their personal life. Producers' attitudes in the spring of 1988 were improved compared to the situation two years before. Only 17 percent said the financial situation has had a great deal of effect, compared to 30 percent in 1986 (Table 19). Similarly, 23 percent said they had not been affected at all, compared to 16 percent in 1986.

Producers who said that their personal life had been affected often cited the need to repair machinery rather than replace it, a need to get along on less money generally, and the need to have little or no vacation.

TABLE 19. EFFECT OF FARM FINANCIAL SITUATION ON PERSONAL LIVES OF NORTH DAKOTA FARM OPERATORS, 1986 AND 1988

Item	Unit	1986	1988
Extent of effect:			
A great deal	Percent	30.2	16.6
Some	Percent	53.9	60.4
Not at all	Percent	15.9	23.0

The operators were also asked whether they or any member of their immediate family had experienced any of a number of specific events, which are normally stressful, during the past two years. Responses to this question are summarized and compared to those in 1986 in Figure 7. Operators reported a lower level of depression and emotional problems (16 percent versus 24 percent in 1986) and marital or family stress or conflict (11 percent in 1988 versus 15 percent in 1986). The frequency with which most of the other events were reported was also somewhat lower in 1988.

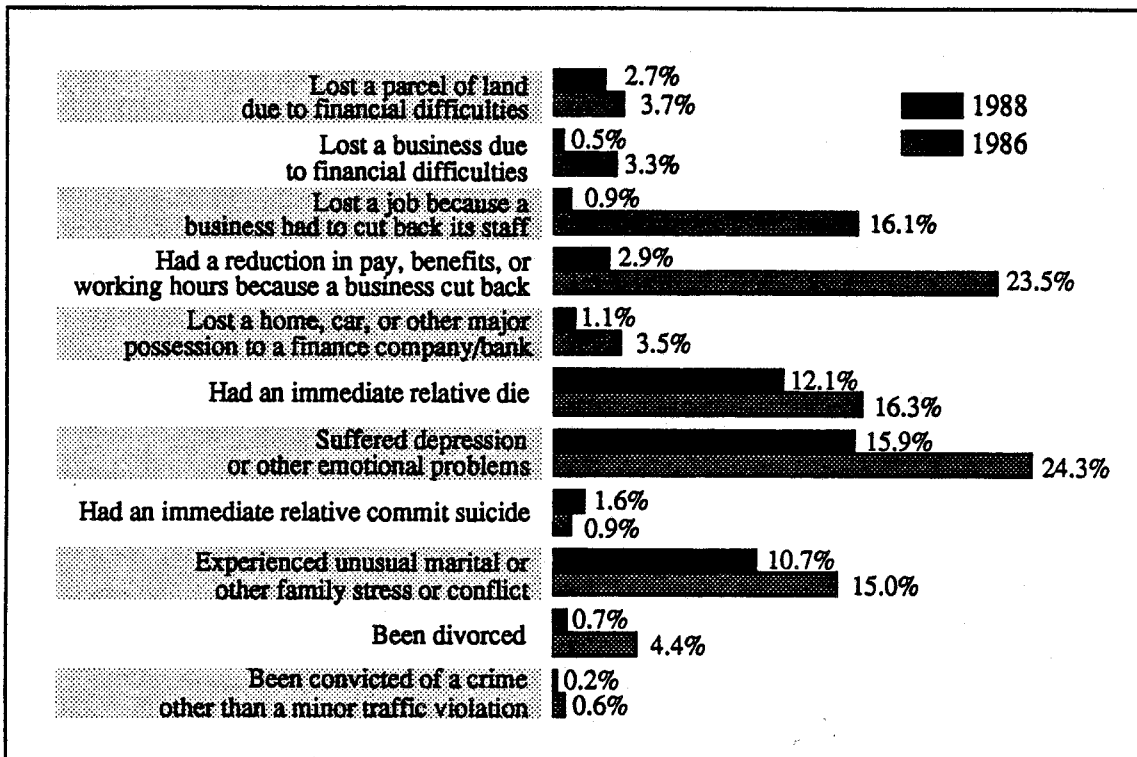


Figure 7. Stressful Events Experienced in the Last Two Years by North Dakota Farmers

### Farm Operators' Outlook and Satisfaction with Farming

Producers were questioned regarding their likelihood of being able to continue farming for at least three years and to expand within the next three years (Table 20). Most producers (82 percent) felt they were likely or very likely to be able to continue. This represents an increase from the 75 percent who felt likely to continue in 1986. More than 28 percent felt they would be able to expand in the next three years, compared to 23 percent in 1986.

Producers' satisfaction with the financial returns from farming had also improved since 1986. Almost 24 percent said they were satisfied with the financial returns from farming compared to only 8.5 percent in 1986 (Table 20). Likewise, the percentage who were satisfied with farming overall was up substantially, from 40.1 percent in 1986 to 54 percent in 1988.

### Conclusions and Implications

Is the farm crisis over as some suggest (Daft 1988), or did the improved income in 1986-87 merely offer farmers a brief respite? Results of the North Dakota farm panel survey strongly suggest the latter interpretation. Net cash farm income and total family income for 1987 were up substantially from 1985 levels, but producers' balance sheets showed the effects of continued erosion of asset values. From December 31, 1984, to December 31, 1987, the total assets of the average producer fell from \$415,756 to \$375,514--a decrease of 9.7 percent. Total debt decreased less than 2 percent during this period, so the average producer's net worth fell by about 8.6 percent. Equally significant, however, was the increase in the number of producers in the most highly leveraged categories. For instance, as of December 31, 1987, 19.9 percent of the producers surveyed had debt-to-asset ratios over 0.7 and 6.4 percent had ratios greater than 1.0 (i.e., they were insolvent).

The precarious position of the most highly leveraged producers is a continuing source of concern for agricultural lenders as well. As of December 31, 1987, producers with debt-to-asset ratios greater than 0.7 held more than 42 percent of the total debt reported by the panel.

Although the leverage situation of many producers suggested vulnerability, many producer's outlooks were more favorable than they had been two years previously. About 82 percent of the producers felt that they would be able to continue farming, and 28 percent believed they would be able to expand within the next three years.

The North Dakota farm panel survey has provided a valuable source of timely information about the financial condition of North Dakota farmers. Subsequent surveys and analyses could provide insights concerning such issues as the impacts of the drought of 1988 and producers' strategies for coping with it.

TABLE 20. FARM OPERATOR'S OUTLOOK CONCERNING FUTURE OF THEIR FARMING OPERATION AND SATISFACTION WITH FARMING

Item	Unit	1986	1988
Respondent will expand operation in next three years:			
Very likely	Percent	7.4	10.8
Likely	Percent	15.6	17.3
Don't know	Percent	16.7	16.4
Unlikely	Percent	29.4	28.1
Very unlikely	Percent	30.9	27.4
Respondent will be able to continue to farm for at least three years:			
Very likely	Percent	29.8	41.1
Likely	Percent	45.5	40.9
Don't know	Percent	19.8	12.9
Unlikely	Percent	3.3	2.7
Very unlikely	Percent	1.7	2.4
Respondent's satisfaction with current financial returns in farming:			
Completely satisfied	Percent	0.9	1.6
Satisfied	Percent	7.6	22.1
Neither satisfied nor dissatisfied	Percent	7.6	18.0
Dissatisfied	Percent	48.7	42.6
Very dissatisfied	Percent	35.2	15.6
Respondent's satisfaction with farming as an occupation:			
Completely satisfied	Percent	23.1	28.1
Satisfied	Percent	56.2	53.2
Neither satisfied nor dissatisfied	Percent	9.2	9.4
Dissatisfied	Percent	9.2	7.9
Very dissatisfied	Percent	2.2	1.4
Respondent's satisfaction with farming overall:			
Completely satisfied	Percent	1.1	7.1
Satisfied	Percent	39.0	46.9
Neither satisfied nor dissatisfied	Percent	23.8	22.5
Dissatisfied	Percent	31.1	19.9
Very dissatisfied	Percent	5.0	3.6

## APPENDIX



APPENDIX TABLE 1. GROSS FARM INCOME, NET CASH FARM INCOME, AND DEBT-TO-ASSET RATIO OF NORTH DAKOTA FARM OPERATORS BY REGION

Item	Unit	Region								Total
		1	2	3	4	5	6	7	8	
Gross farm income:										
Mean	Dollars	115,271	95,642	113,069	151,787	172,441	107,888	94,017	91,457	114,899
Median	Dollars	71,080	67,712	87,981	120,000	120,000	80,978	75,000	70,000	80,000
Distribution:										
\$0 to \$40,000	Percent	5.5	18.4	8.3	8.3	5.5	15.6	23.9	14.7	100.0
\$40,001 to \$100,000	Percent	4.0	15.0	10.6	4.0	11.5	19.0	21.2	14.6	100.0
\$100,001 to \$250,000	Percent	2.9	10.7	13.6	13.6	15.7	16.4	17.9	9.3	100.0
\$250,001 or more	Percent	2.0	6.1	10.2	16.3	36.7	12.2	10.2	6.1	100.0
Net cash farm income:										
Mean	Dollars	24,486	17,397	19,361	24,434	36,091	18,172	16,337	14,766	20,751
Median	Dollars	13,000	11,875	15,000	15,000	23,507	15,000	12,000	13,132	15,000
Distribution:										
Zero or negative	Percent	4.0	14.0	14.0	8.0	4.0	18.0	26.0	14.0	100.0
\$1 to \$10,000	Percent	3.7	16.9	8.1	9.6	5.9	18.4	24.3	13.2	100.0
\$10,001 to \$25,000	Percent	3.9	15.4	8.8	6.0	16.5	15.4	20.9	13.2	100.0
\$25,001 or more	Percent	3.8	9.1	13.6	12.1	23.5	17.4	12.1	8.3	100.0
Debt-to-asset ratio:										
Mean	Percent	37.5	51.3	38.9	82.9	40.6	39.2	54.6	41.7	48.1
Median	Percent	38.9	30.8	22.2	29.2	33.3	34.7	34.7	32.0	31.6
Distribution:										
No debt	Percent	2.4	8.5	13.4	12.2	14.6	18.3	15.9	14.6	100.0
0.01 to 0.40	Percent	3.7	15.1	12.8	7.3	14.2	16.5	19.7	10.6	100.0
0.41 to 0.70	Percent	4.6	19.3	5.5	11.0	16.5	19.3	13.8	10.1	100.0
0.71 or more	Percent	3.9	9.7	7.8	5.8	10.7	15.5	31.1	15.5	100.0

APPENDIX TABLE 2. NET CASH FARM INCOME IN 1987 BY DEBT-TO-ASSET RATIO OF FARM HOUSEHOLDS

Item	Debt-to-Asset Ratio				Total
	No Debt	0.01 to 0.40	0.41 to .70	0.71 or More	
-----percent of farm households-----					
Net cash farm income:					
Zero or negative	6.4	6.4	7.9	22.4	10.0
\$0.01 to \$10,000	29.5	21.8	29.7	31.6	26.7
\$10,001 to \$25,000	34.6	36.6	39.6	32.7	36.1
\$25,001 or greater	29.5	35.1	22.8	13.3	27.1
Total	16.3	42.2	21.1	20.5	100.0

APPENDIX TABLE 3. DEBT-TO-ASSET RATIO AND NET CASH FARM INCOME BY AGE OF OPERATOR, 1987

Item	Age of Operator				Total
	<35	35-44	45-54	55 or older	
-----percent of farm households-----					
Debt-to-asset ratio:					
No debt	8.0	6.9	6.1	31.6	16.1
0.01 to 0.40	36.0	36.2	46.5	47.4	42.6
0.41 to 0.70	25.3	33.9	23.7	10.0	21.4
0.71 or more	30.7	23.1	23.7	11.1	19.8
Net cash farm income:					
Zero or negative	5.6	13.5	12.2	7.6	9.8
\$1 to \$10,000	33.3	31.0	22.6	30.3	27.1
\$10,001 to \$25,000	40.3	32.5	39.1	36.2	36.6
\$25,001 or more	20.8	23.0	26.1	31.4	26.5



APPENDIX TABLE 4. PERCENT OF TOTAL DEBT HELD BY PRODUCERS IN VARIOUS DEBT-TO-ASSET CLASSES

Debt-to-Asset Ratio Category	Percent of Total Debt Held	
	December 31, 1985	December 31, 1987
Less than 0.4	26.4	27.4
0.4 - 0.7	35.8	30.5
0.7 - 1.0	23.5	22.7
1.0 or greater	14.4	19.4

APPENDIX TABLE 5. GROSS EARNINGS FROM OFF-FARM EMPLOYMENT BY SELECTED CHARACTERISTICS

Item	Respondent's Gross Off-Farm Earnings					
	0- \$1,000	\$1,001- \$2,500	\$2,501- \$5,000	\$5,001- \$7,500	\$7,501- \$10,000	Over \$10,000
-----percent-----						
County type:						
Agr. dependent	5.4	12.2	24.3	12.2	16.2	29.7
Agr. important	16.7	16.7	0.0	8.3	8.3	50.0
Other	12.0	16.0	12.0	8.0	12.0	40.0
Age:						
Less than 35	8.3	16.7	29.2	4.2	16.7	25.0
35-44	5.9	8.8	17.6	17.6	17.6	32.4
45-54	7.1	10.7	7.1	10.7	14.3	50.0
55 and over	12.0	20.0	20.0	8.0	8.0	32.0
Education:						
Less than H.S.	6.3	18.8	25.0	6.3	18.8	25.0
High school grad.	5.6	19.4	19.4	8.3	5.6	41.7
Post secondary	11.1	9.3	16.7	14.8	16.7	31.5
Days worked off farm:						
Less than 50	18.9	29.7	21.6	2.7	18.9	8.1
51 to 100	6.7	6.7	33.3	33.3	6.7	13.3
101 to 200	0.0	7.9	18.4	10.5	18.4	44.7
Over 200	0.0	0.0	0.0	12.5	0.0	87.5
Years worked at job:						
Less than 2	23.5	17.6	23.5	17.6	5.9	11.8
2 - 5	3.7	11.1	18.5	14.8	11.1	40.7
6 - 10	4.3	21.7	8.7	13.0	21.7	30.4
> 10	7.9	7.9	26.3	2.6	7.9	47.4
Plan to look for different job:						
Yes	23.1	0.0	23.1	15.4	7.7	30.8
No	6.2	14.4	18.6	10.3	15.5	35.1
Occupation types:						
Farm related	0.0	0.0	0.0	100.0	0.0	0.0
Prof/exec/admin	0.0	0.0	10.0	0.0	15.0	75.0
Tech/sales/office	7.1	17.9	10.7	14.3	17.9	32.1
Service	0	25.0	25.0	50.0	0.0	0.0
Prec/craft/repair	13.0	17.4	17.4	0	17.4	34.8
Equip oper./laborer	8.6	14.3	31.4	14.3	11.4	20.0

APPENDIX TABLE 6. PLANS OF OPERATORS AND SPOUSES TO LOOK FOR OFF-FARM WORK  
IN THE NEXT YEAR BY DEBT-TO-ASSET RATIO

Item	Debt-to-Asset Ratio				Total
	No Debt	0.01 to 0.40	0.41 to .70	0.71 or More	
	-----percent who will look-----				
Operators	5.9	5.6	11.4	12.3	8.0
Spouses	2.1	2.9	9.3	18.8	6.6



## References

- Barnard, Freddie L., W. D. Dobson, and Jearene Falck. 1988. Results of the Indiana Farm Finance Survey for 1988. Purdue Agricultural Economics Report. West Lafayette, Indiana: Purdue University Cooperative Extension Service.
- Daft, Lynn M. 1988. "Priority Issues for the New Farm Bill." Increasing Understanding of Public Problems and Policies--1988. Oak Brook, Illinois: Farm Foundation, pp. 65-77.
- Edelman, Mark A., and Douglas R. Olsen. 1988. 1988 Iowa Farm Finance Survey. Ames, Iowa: Iowa State University.
- Hanson, Gregory, Richard Kodl, and Gary Lucier. 1988. Recent Financial Gains Helping Farmers Withstand Drought. Agricultural Information Bulletin No. 543. Washington, D.C.: USDA, Economic Research Service.
- Johnson, Jerome. 1989. "North Dakota Farmland Values Rose in 1988." North Dakota Farm Research 46(4):3-9.
- Leistritz, F. Larry, and Brenda L. Ekstrom. 1988. "The Financial Characteristics of Production Units and Producers Experiencing Financial Stress," in The Farm Financial Crisis: Socioeconomic Dimensions and Implications for Producers and Rural Areas, S. Murdock and L. Leistritz eds. Boulder, Colorado: Westview Press.
- Leistritz, F. Larry, Wallace C. Hardie, Brenda L. Ekstrom, Arlen G. Leholm, and Harvey G. Vreugdenhil. 1987. Financial, Managerial, and Attitudinal Characteristics of North Dakota Farm Families: Results of the 1986 Farm Survey. Agr. Econ. Rpt. No. 222. Fargo: North Dakota State University, Dept. of Agr. Econ.
- Leistritz, F. Larry, Arlen G. Leholm, Harvey G. Vreugdenhil, and Brenda L. Ekstrom. 1986. "Effect of Farm Financial Stress on Off-Farm Work Behavior of Farm Operators and Spouses in North Dakota." North Central Journal of Agricultural Economics 8(2):269-281.
- Morehart, Mitchell J., James D. Johnson, and David E. Banker. 1988. Financial Characteristics of U.S. Farms, January 1, 1988. Agr. Info. Bull. No. 551. Washington, D.C.: USDA, Economic Research Service.
- Mortensen, Timothy, David L. Watt, and F. Larry Leistritz. 1988. Loan Default Prediction Using Logistic Regression and a Loan Pricing Model. Agr. Econ. Misc. Rpt. No. 119. Fargo: North Dakota State University, Dept. of Agr. Econ.
- Salant, Priscilla, Melinda Smale, and William Saupe. 1986. Farm Viability: Results of the USDA Family Farm Surveys. Rural Development Res. Rpt. No. 60. Washington, D.C.: USDA, Economic Research Service.

- Saupe, William, and Brian W. Gould. 1988. Multiple Job Holding Among Farm Families: Results From the Wisconsin Family Farm Surveys. Agr. Econ. Staff Paper Series No. 289. Madison, Wisconsin: University of Wisconsin, Dept. of Agr. Econ.
- Spitze, R. G. F., and R. K. Mahoney. 1988. Evolving Dimensions of Dual Employment of Illinois Farm Families. Illinois Agr. Econ. Staff Paper 88E-407. Urbana, Illinois: University of Illinois, Dept. of Agr. Econ.
- U.S. Department of Commerce, Bureau of the Census. 1984. 1982 Census of Agriculture, Vol. 1--Geographic Area Series, Part 34--North Dakota. AC82-A-34. Washington, D.C.: Government Printing Office.
- Watt, D. L., J. A. Larson, G. D. Pederson, and B. L. Ekstrom. 1986. The Financial Status of North Dakota Farmers and Ranchers: January 1, 1985, Survey Results. Agr. Econ. Rpt. No. 207. Fargo: North Dakota State University, Dept. of Agr. Econ.
- Weinberg, Daniel H. 1985. "Measuring Poverty." Family Economics Review (2):9-13,

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