Management Adjustments in the Face of Farm Financial Stress

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Much attention has been focused recently on the financial pressures on farmers in the Upper Midwest, one of the hardest hit regions in the nation.[1] One question that arises is, what management changes are farmers making in response to these financial pressures? This article examines management adjustments made by North Dakota farmers and ranchers in the past few years to reduce farm debt and to cope with the changing economic conditions of the 1980s. Significant factors involved in explaining why operators are making certain changes are analyzed, and proposed changes in their management practices are outlined.

Data for this analysis are from a 1986 telephone survey of 759 North Dakota farmers and ranchers, first surveyed in 1985. Respondents were screened to include only those who considered farming as their primary occupation, were less than age 65, and sold at least $2,500 of farm products annually.

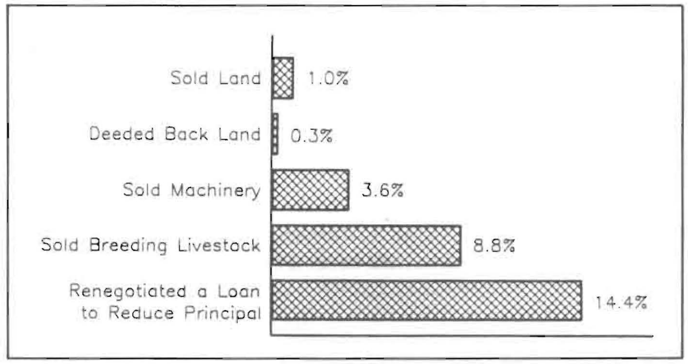

Figure 1. Management Changes Made to Reduce Farm Debt, North Dakota Farmers, 1985.

Strategies to Reduce Farm Debt

Farm operators were asked if they had made any of five changes in their operation in an attempt to reduce farm debt. About three out of ten operators had made at least one of these changes (Figure 1). The most often mentioned change was renegotiating a loan to reduce the principal amount. Very few had sold land, machinery, or breeding livestock to reduce their indebtedness.

A breakdown of those renegotiating a loan by debt-to-asset ratio, by net cash farm income, and by age reveals that, as expected, those with debt ratios over .40 were most likely to have renegotiated a loan. Younger operators were also more likely to have renegotiated; however, the income variable was less correlated to the change.

Specific Management Adjustments

Operators were then asked if they had made any of several specific changes in their operation in 1985 that they would not have made in a typical year. By asking this question, we were hoping to identify changes made specifically because of the economic environment of the 1980s—changes made in response to financial pressures imposed by recent declining asset values, falling commodity prices, and changing governmental farm and monetary policies.

Responses reveal that three out of five postponed capital purchases, almost one-half cut back on tillage operations, and about one-half reduced family living expenses (Figure 2). About one-fourth had cut back on fertilizer and chemicals, and just over one-fifth had begun or increased their participation in the farm programs. Also high on the list was renegotiating a loan or land contract to reduce the interest rates or obtain longer repayment terms. Thus, it appears that operators are making major adjustments in their farming operation, family budget, and debt structure.

These changes were cross-tabulated by debt-to-asset ratio to determine the degree to which farmers with more debt were making changes. Farmers with over 70 percent debt were making all but one of the 14 changes in the list at a level higher than the average (Table 1). These farmers were more than twice as likely as the average operator to have renegotiated a loan or land contract to reduce interest rates, begun to use crop insurance, obtained professional financial advice, and started participating in government farm programs. Operators with between 41 and 70 percent debt were also more likely to have made these specific changes, but at a lower level. In contrast, those with no debt had made few changes except for reducing tillage operations, postponing capital purchases, and reducing family living expenses.

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[1]*Johnson et al. 1986*

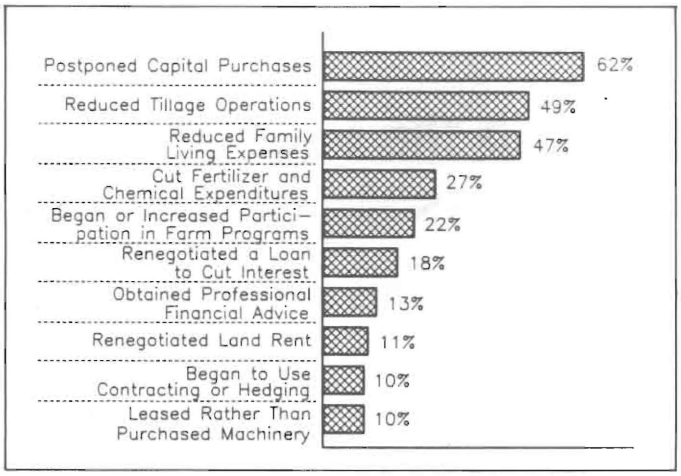

Figure 2. Management Adjustments, 1985.

The chi-square test was applied to determine if the relationship between the change and the level of debt was statistically significant. All but two of the changes (switching from cash to share rent and beginning to use contracting or hedging as a market tool) were significantly related to the debt-to-asset ratio at the 1 percent level. This means that the chances are 1 in 100 that the respondents would be grouped as such by chance alone. In other words, the relationship is very strong.

Some regional differences in carrying out specific management changes were also apparent (see Figure 3 for a map of North Dakota regions). A selected listing of changes is presented in Table 2. Only two of the changes were statistically significant at the 1 percent level—cutting back on fertilizer and chemical expenditures and reducing tillage operations. The higher incidence of these two changes in the western regions may be due, in part, to drought conditions in 1984 and 1985. Three other variables, however, were significant at the 5 percent level, which also indicates a strong relationship.

Table 1. Percent of North Dakota farm operators making specific changes according to their level of debt.

Specific Change	No Debt	1% to 40% Debt	41% to70% Debt	Over 70% Debt	Overall
	Operators Making the Specific Change				
	percent				
Renegotiated a loan to reduce interest[b]	0.8	9.3	24.0	47.2	17.6
Renegotiated a land rental agreement to reduce land rents[b]	1.5	8.9	18.1	16.2	11.0
Switched from cash to share rent	0.0	3.0	5.3	4.9	3.3
Changed lending institutions[b]	0.0	6.0	9.4	13.0	6.9
Began to use contracting or hedging as marketing tools	3.8	11.3	13.5	9.8	10.2
Began to use crop insurance[b]	3.0	10.0	11.1	20.3	10.7
Obtained professional financial advice[b]	1.5	10.9	14.6	27.6	12.9
Leased machinery rather than purchased[b]	4.5	8.3	14.0	16.3	10.3
Reduced family living expenses[b]	21.1	42.7	57.3	70.7	46.9
Postponed capital purchases[b]	33.8	56.0	79.5	84.6	62.3
Started participating in government farm programs[b]	6.0	9.9	6.4	17.0	9.6
Increased participation in farm programs[b]	3.8	12.6	12.9	18.7	12.1
Cut back on expenditures for fertilizer and chemicals[b]	15.8	26.5	24.0	42.6	26.7
Reduced tillage operations[b]	33.8	51.3	53.2	56.1	49.4
Percentage of respondents in each debt category	18.2	41.4	23.5	16.9	

[a]N 5

[b]Significant at the 1 percent (.01) level.

Note: N = 729.

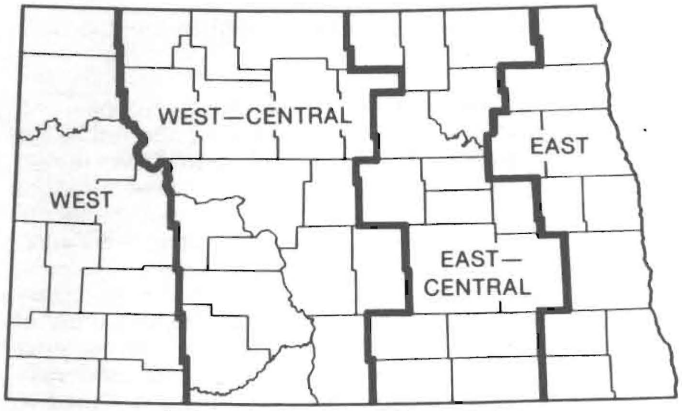

Figure 3. Regions in North Dakota.

Why Farmers are Making Changes. To assess the influence of various financial, individual, family, farm, and area characteristics on the decision of farm operators to make certain management changes, multiple discriminant analysis was used. Discriminant analysis is a statistical technique for classifying an item into one of several mutually exclusive classes on the basis of certain of its properties or characteristics. The variables that survive this process are significant in explaining the propensity to make a certain management change. The results are summarized in Table 3.

Table 2. Percent of North Dakota farmers making selected management changes by region, 1985.

Specific Change	West	West Central	East Central	East	Overall
Renegotiated a loan to reduce interest	24.6	17.5	16.3	13.5	17.4
Renegotiated a land rental agreement to reduce land rents[a]	10.7	8.3	16.3	8.2	10.9
Began to use crop insurance	13.9	7.5	13.0	10.6	10.8
Reduced family living expenses[a]	44.3	54.8	44.2	40.6	46.9
Postponed capital purchases[a]	56.6	63.9	68.8	55.9	62.3
Increased participation in farm programs	13.9	13.1	8.8	12.4	11.9
Cut back on expenditures for fertilizer and chemicals[b]	36.1	32.1	28.0	12.4	27.2
Reduced tillage operations[b]	51.6	56.4	46.1	40.6	49.1
Percentage of farms in each region	16.1	33.2	28.3	22.4	100.0

[a]Significant at the 5 percent (.05) level.
[b]Significant at the 1 percent (.01) level.

Table 3. Variables that explain why North Dakota farmers are making specific changes, 1985.

	Variables Entered in Order of Significance		
Specific Change	First	Second	Third
Renegotiated a loan to reduce interest	°Debt-to-asset ratio	°Region	—
Changed lending institutions	°Debt-to-asset ratio	°Net cash farm income	°Respondent's education
Began to use contracting or hedging as marketing tools	°Respondent's education	—	—
Began to use crop insurance	°Age of operator	°Type of farm	—
Obtained professional financial advice	°Debt-to-asset ratio	°Type of farm	°NDSU cooperator[b]
Leased machinery rather than purchased	°Debt-to-asset ratio	—	—
Reduced family living expenses	°Debt-to-asset ratio	°Spouse's education	°Net cash farm income less family living expenses[a]
Postponed capital purchases	°Debt-to-asset ratio	°NDSU cooperator[b]	°Net cash farm income less family living expenses[a]
Started participating in government farm programs	°Debt-to-asset ratio	—	—
Cut back on expenditures for fertilizer and chemicals	°Region	°Debt-to-asset ratio	—

[a]Family living expense allowance is based on the poverty income threshold (Weinberg 1985).
[b]Attends meetings and receives literature through the NDSU Cooperative Extension Service.

In seven out of ten cases, the financial pressures brought about by a high debt-to-asset ratio proved to be the most significant factor in explaining why farmers were making changes in 1985. Low net cash farm income was significant in inducing a change in lending institutions, a reduction in family living expenses, and a postponement of capital purchases. Farmers and ranchers in western regions were more inclined to renegotiate the interest on a loan and to cut back on fertilizer and chemical expenditures. Those operators with higher levels of education were more prone to adopt hedging and forward contracting as marketing strategies and to change lending institutions. Younger operators (less than 35) were more likely to begin using crop insurance than their older counterparts. Farmers receiving more than 50 percent of their gross earnings from crops had a higher propensity to use crop insurance and obtain professional financial advice than more diversified operators. Those who took part in educational programs sponsored by North Dakota State University were more likely to postpone capital purchases and obtain professional financial advice in 1985.

Proposed Changes in Farming Practices. In addition to asking what changes were made last year (1985), we asked operators what adjustments they planned to make in the coming year (1986) to improve their financial position. These projected changes are listed in Figure 4. The desire to better manage the use of fertilizer and chemicals in the production process was the most often mentioned adjustment. It is presumed that many producers feel a number of low-cost refinements can be applied to the use of these two inputs, such as increased use of soil testing, selection of least-cost fertilizers, better knowledge of the fertility needs of each crop grown, proper calibration of spraying equipment, and identification of the most appropriate chemical for the weed problems of individual fields.

The second most often mentioned adjustment planned was the adoption of minimum-till and no-till practices. The main advantages of this production system are lower machinery operating costs, lower labor requirements, and minimization of soil moisture loss. The main disadvantages are increased expenditures for chemicals, more refined management, and increased capital asset outlays (for the specialized equipment necessary). For many operators, especially those in the more arid regions of the state, the advantages of minimum- or no-till outweighed the disadvantages.

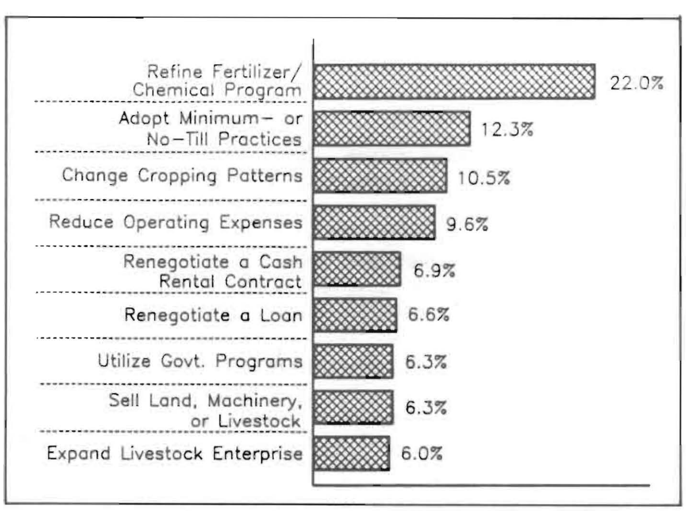

Figure 4. Planned Future Adjustments to Improve Financial Position.

A number of operators intended to change cropping patterns in 1986. The need to find a crop not affected by the restrictions of the farm program to replace sunflower (a low-return crop in 1985) was implied here. An intent to reduce operating expenses was fourth on the list of respondents' goals. Surprisingly, of those farmers indicating this desire, 72 percent had relatively low debt levels. Lowering operating cost does not necessarily include reducing fertilizer and chemical inputs. For many operators, increased use of volume discounts and early payment bonuses can cut input costs. More effective use of hired labor, better machinery maintenance programs, and marketing plans designed to meet cash flow needs are all effective methods of reducing operating costs without sacrificing output.

Renegotiating a loan and/or cash rental contract was a priority item for those operators with relatively high levels of debt. Certain operators also expressed a need to increase their knowledge of the current farm program so that they could maximize the benefits offered by the program. Selling some land or machinery was viewed as a necessary objective in 1986 by relatively few of the farmers responding, but of those stating this objective one-half had a debt-to-asset ratio of over 70 percent.

Expanding a livestock enterprise was ninth on the list of proposed changes. About three-fourths of the operators with this objective also had relatively high debt levels. For those operators able to survive 1985 without heavy losses, expansion of the livestock enterprise was viewed as an opportunity since breeding stock was relatively inexpensive.

Summary

North Dakota farmers and ranchers are using many management strategies to overcome the financial pressures of the 1980s. Operators, especially those in the higher debt categories, have already postponed capital purchases, reduced tillage operations, and reduced family living expenses. These strategies will undoubtedly be carried over into the upcoming years. Future plans include refining their fertilizer and chemical program, changing their cultivation practices to include minimum- or no-till operations, and changing their cropping patterns. Few operators indicated they had, or will, sell land, machinery, or livestock to ease their financial pressures. It is evident that the farm financial crisis has forced many changes in the operations and in the family budgets of many North Dakota farmers and ranchers.

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