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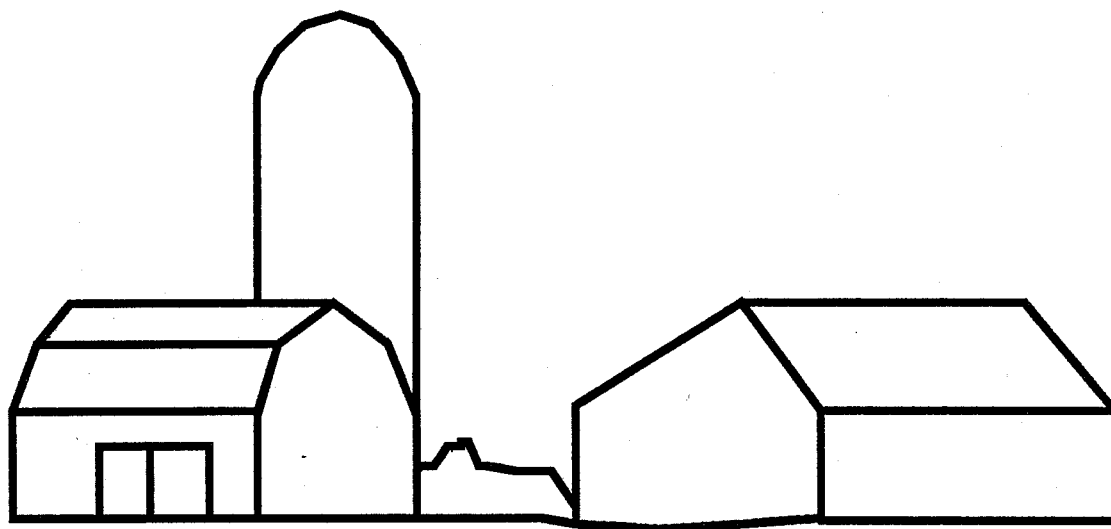
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North Dakota Crop Production Economics in 1991

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Highlights

Recent macroeconomic developments and federal farm policy changes are likely to financially impact North Dakota farm operations in 1991. This study estimates the financial impact and, using a panel of farm operators as a proxy for a typical North Dakota cash grain farm, examines the implication of changes in net farm income on the debt-servicing capacity of grain producers. Expected changes in net farm income also were used to suggest ramifications for North Dakota farmland values.

The financial impact of recent macroeconomic developments and federal farm policy changes on a panel wheat farmer was an estimated \$10 per historic wheat base acre reduction in gross income. This assumes the farmer participated in both the 1990 and 1991 farm programs, received normal yields, and planted oil sunflower on wheat flex acres in 1991. Wheat production costs were projected to increase \$2 per planted acre. Historic wheat base acre returns to unpaid labor, management, and risk were projected to decline \$5, assuming oil sunflower are planted on wheat flex acres. Over 70 percent of this reduction can be attributed to changes in farm program provisions. The remaining 30 percent is the result of increased production expenses in 1991.

An average panel crop farm (producing wheat, oil sunflower, barley, corn, and oat) located in south central North Dakota was projected to experience a \$10,900 (15 percent) reduction in net cash flow (that is, returns available for family living expenses, machinery replacement, land rent, debt service, and self-employment, income, and property taxes) as a result of the recent macroeconomic developments and federal farm program changes. This represented a projected decline of \$10 per acre in net cash flow from 1990 to 1991 assuming normal yields in both years. Applying this reduction in net cash flow to the financial characteristics of panel non-valley North Dakota crop farm operators revealed that nearly 14 percent were anticipated to move from a positive to a negative net cash flow position. Another 20 percent would experience some financial difficulties in the coming year.

An estimated \$7 per acre net cash flow was projected to be available to pay for additional capital replacement and debt service, assuming a panel farmer had a debt-to-asset ratio of 35 percent. Net cash flow became negative for panel crop farm operators with debt-to-asset ratios of 45 percent or more. Approximately 35 percent of the panel of non-valley crop farmers had debt-to-asset ratios of 45 percent or more.

Farm income in North Dakota might decline by as much as \$189 million in 1991. Some of the decline in farm income from crops might be offset by increased farm income from livestock operations. Likewise, farm income would improve (decline) to the extent 1991 yields are greater (less) than those of 1990.

Study results indicated that short-term (1991 crop year) net cash returns will be reduced by 15 percent. If lower net cash returns exist for only one year (1991) and then recover, adjustments in farmland values would be minimal. However, if net cash returns remain at this lower level for several years, the long-term implications are reduced farmland values. Future average farmland values may decline by \$47 (15 percent) per acre if farm income remains at the projected 1991 level.

NORTH DAKOTA CROP PRODUCTION ECONOMICS IN 1991

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Introduction

The 1990 Census substantiates that for the first time more North Dakotans live in urban centers than in rural areas (North Dakota Agricultural Experiment Station 1991). Despite this change, a vast majority of the state's new wealth and economic activity still depends on production agriculture (Leistritz and Coon 1991). A relevant question is the extent macroeconomic developments and federal farm policy changes impact the state's farm economy. This is an important question not only for farmers as they plan for the coming season but also for landowners, lenders, agribusinesses that deal with farm owners, and rural merchants across the state.

This study investigates the impact of recent developments on a portion of North Dakota farm producers. The study group is crop farmers producing outside the Red River Valley. Thus, livestock producers and Red River Valley farm operations are not directly considered in the analysis. The recent developments that are reviewed include changes in the farm program (including changes in set-aside requirements and flex acres) and macroeconomic changes (including the general economic recession and energy prices).

Results indicate that non-Valley crop producers will likely experience decreased revenue in 1991 compared to 1990. The analysis, however, assumes normal yields existed in both 1990 and 1991 for comparison purposes. Therefore, operators who experienced below-normal yields in 1990 as a result of drought conditions may enjoy greater net farm income in 1991 if normal yields return. Improved yields will generate greater market revenue to offset potential increases in production expenses and reductions in government farm subsidies. Conversely, farmers experiencing normal or above-normal yields in 1990 and below- or near-normal yields in 1991 may receive less farm income in 1991 due to the combined effects of reduced yields, lower government farm program subsidies, and market revenues.

As in the past, the impact of diminished net farm income is expected to reach beyond farm operators and their families. Some rural businesses which supply consumer items for the family as well as production inputs for the farm business may be affected by lower expenditures as farm operators adjust to less disposable income. Creditors may find that some farm borrowers are unable to service their short- and long-term debt. Likewise, farmland owners who lease their property to other operators may sense downward pressure on cash rental rates. The study, however, is limited to estimating the impact on crop producers and does not attempt to quantify the secondary impacts of lower farm income on local economies.

The initial step in analyzing the financial impact of recent developments on a typical North Dakota crop farm is to estimate the change in

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net farm income from 1990 to 1991. The study then examines the impact of net farm income changes on debt-servicing capacity. Finally, implications for farm real estate values in the state are considered.

A description of relevant recent developments will set the background for the analysis. The following description and subsequent analysis compares 1990 to 1991 to isolate the impacts of recent developments. Likewise, critical assumptions will be identified throughout the analysis so the implications of changing these assumptions can be illustrated.

Selected Recent Developments

Set-Aside Requirement. The 1991 wheat program requires participating operators to set aside (idle) 15 percent of their program base acreage rather than the 5 percent that was required for 1990. This 10 percent reduction in planted acreage means less revenue from market commodity sales and government subsidy payments, decreased production costs since less land is planted, and increased fallow costs since more acreage is idled. The set-aside (or ACR) requirement of the farm program is adjusted annually to reflect worldwide food production and consumption. Two years of worldwide record wheat production have increased residual stocks and have led to increased set-aside requirements for wheat producers. Required set-aside for barley, corn and oat have been decreased and will have the opposite impacts (i.e., more revenue from market commodity sales and government subsidy payments, increased production costs, and decreased fallow costs).

Flex Acreage. A second major change for the 1991 farm program results from the 1990 farm bill. Previous farm bills based government payments on historic base acres minus set-aside acres (or actual planted acres, if that was less). Prior legislation also required that producers plant only the specific crop assigned to the historic base acreage. The 1990 farm bill changes this practice by allowing producers to plant (flex) between 0 and 15 (normal flex, which is mandatory) and 16 and 25 (optional flex) percent of their historic base acreage to other crops. The portion of the base acreage that is planted to other crops (flexed), however, no longer qualifies for income subsidies. Consequently, farmers must consider other production alternatives and select a mix of crop enterprises that maximizes net income. Any program crop (such as wheat) produced on flex acreage will only generate revenue available from the market and not the higher returns of market plus government support. This new concept reduces producers' government income subsidies; but profits from alternative crops can offset the revenue decrease. A farmer's production decisions will have to be based on the realization that less federal farm subsidies will be provided in 1991. Therefore, farmers must develop production plans for flex acres that consider opportunities presented by market prices.

Drought. The third development that must be recognized is the drought. As mentioned in the introduction, to the extent that normal yields return in 1991, income should improve when compared to 1990. (This assumes below-normal yields for 1990; farmers with above-normal yields in 1990 will experience less income in 1991 with a return to normal yields.) A continuation of the drought will, of course, diminish the likelihood of higher income as a result of improved yields. It is also important to recognize that farmers with improved

yields may have slightly higher costs (such as harvesting costs) in 1991 compared to 1990. Due to the variation in 1990 growing conditions throughout the state and the uncertainty for 1991 production, the same yield (a 5-year average yield) is used for both years of the analysis, and the impact of changing yields is not estimated.

Market Price. A fourth consideration is projected market price. The analysis assumes slightly higher market prices for wheat and barley, slightly lower prices for corn, and a constant market price for oat. There is a direct impact on revenue to the extent prices are higher or lower than assumed in this analysis. Expectations of slower economic growth in many nations suggest that demand for U.S. agricultural commodities may weaken, thus placing downward pressure on market prices.

Deficiency Payment. The analysis also assumes a higher deficiency payment per bushel for wheat, barley, and corn. The deficiency payment is computed as the target price (which Congress sets) minus the higher of 1) the loan rate or 2) the 5-month national average market price. Generally, the 5-month national average price exceeds the loan rate. For wheat, the target price is \$4 per bushel, and USDA is projecting a deficiency payment of \$1.47 per bushel for 1991. This implies that USDA is expecting the 5-month national average market price to be \$2.53 (4-1.47) for the 1991 wheat crop.

Production Expenses. Total production expenses are projected in the analysis to be higher for 1991 than they were in 1990. Some input costs (crop insurance, hauling, and land taxes) are not expected to change. Seed costs should be down because the commodity prices decreased from 1989 to 1990. Fertilizer and fuel are projected to be higher, due primarily to concern over expanding hostilities in the Middle East prior to the war with Iraq that created expectations of a crude oil shortage in the United States. However, the market price of oil has been dropping since fighting started in January when it became apparent that the war would not disrupt U.S. oil supplies. Consequently, 1991 energy costs may not be as high as projected earlier. However, to the extent that petroleum and petroleum-based products have already been purchased and/or used during the fall season to prepare for 1991 crop production, operators will not benefit from the lower costs. Likewise, input suppliers who purchased their stocks at higher prices will be reluctant to lower their selling price. This also may limit the opportunity for farmers to realize cost savings due to recent lower petroleum prices.

Interest Rates. Borrowed capital is a critical input for farm businesses. The analysis assumes 12 percent over 6 months on operating loans, 12 percent over 7 years on machinery loans, and 10 percent over 30 years for real estate debt. However, the decreased demand for capital that accompanies an economic recession places downward pressure on interest rates. The Federal Reserve has eased monetary policy and lowered the discount rate (that is, the interest rate charged to member banks for capital funds) which, in turn, has led to lower market interest rates. However, this may not significantly lower interest rates farmers pay since lenders may widen their net interest margins to improve profitability. Production expenses will decrease to the extent that lower interest rates are available to producers.

Debt Levels. The amount of debt the farm business must service directly affects its profitability. Machinery and land investments are the primary

sources of farm debt. Machinery investment for a typical North Dakota farm was \$158 per acre for 1990 and \$188 in 1991 (Haugen and Aakre 1991). A higher machinery investment reflects a 19 percent increase in the cost of purchasing farm equipment from 1990 to 1991. Land investment was \$311 and \$316 per acre in 1990 and 1991, respectively, based on cropland values for southeast central North Dakota (Johnson 1990). A panel of North Dakota farm and ranch operators indicates a median debt-to-asset ratio of 31 percent and 34 percent for 1990 and 1991, respectively (Leistritz et al. 1990). Farm operators with higher (lower) machinery and land investments and debt-to-asset ratios will have lower (higher) farm incomes than those presented in this study.

Changes in set-aside requirements, government income subsidies, growing conditions, energy prices, production expenses, interest rates, market prices, and debt levels are among the recent developments considered in this analysis and described in the subsequent sections.

Study Area

The geographical study area is south central North Dakota (Figure 1). Crop enterprises (acreage and yields) and farm sizes in this area are assumed

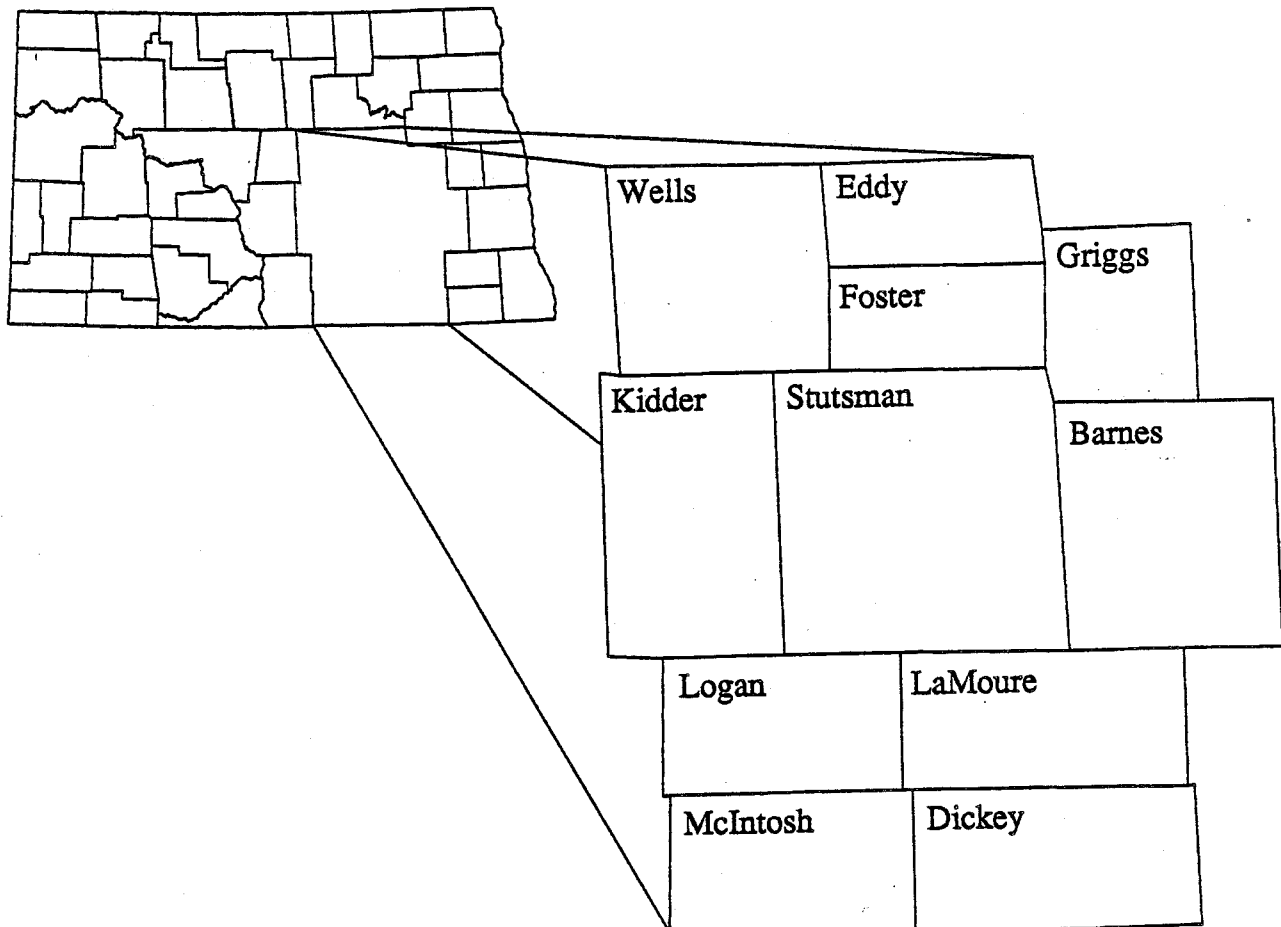


Figure 1. Counties Located in South Central North Dakota

to approximate an average North Dakota crop farming operation. This assumption is supported by the similarity among average yields and farm sizes for south central North Dakota and the state (North Dakota Agricultural Statistics Service 1990 and Leistritz et al. 1990):

<u>Crop</u>	<u>South Central Five Year (1985-89) Average Yields</u>	<u>North Dakota Five Year (1985-89) Average Yields</u>
Spring Wheat	27.3 bu.	27.6 bu.
Oil Sunflower	1,170.0 lbs.	1,160.0 lbs.
Barley	44.4 bu.	42.4 bu.
Corn	65.0 bu.	78.2 bu.
Oat	50.0 bu.	41.8 bu.
<u>Farm Size</u>	1,180 acres	1,211 acres

Crop yields, production expenses, and farm base acres used in this study represent those of an average or typical crop farm operating within this geographical area. Enterprises and number of base acres by crop in the region for 1989, based on a farm panel, were (Leistritz et al. 1990):

<u>Crop</u>	<u>Base Acres</u>
Spring Wheat	670
Sunflower	260
Barley	170
Corn	45
Oat	35
Total	<u>1,180</u>

The number of base acres for a specific crop is of particular importance for this study because they are used to determine federal farm program payments. It is assumed that 1990 and 1991 crop enterprises and base acres have not changed significantly since 1989.

Limitations

Results presented are relevant only to non-Valley crop farms operating in the state. Crop farmers may experience financial changes significantly different from operations with livestock enterprises. Combination crop/livestock or livestock-only operations may be able to modify existing enterprise combinations to capitalize on potential impacts of the 1990 Farm Bill (for example, not participating in the farm program, thereby allowing additional land to be used to raise feed for livestock or participating in the farm program and raising feed crops on flex acres).

Economic Production Costs

Initially, this study will examine economic production costs. This implies that inputs into the production process are valued at their opportunity cost or "next best" alternative use and represent a long-term farm financial situation. Economic costs are used to compare the relative profitability of enterprises and can be used to approximate changes in the total farm's profit-and-loss statement. All inputs except operator labor and management have been included in economic costs.

Cash Production Costs

Cash production costs are used to project the financial feasibility of production. Cash costs used in this study include only out-of-pocket direct expenses and exclude debt service (land and machinery investment) and depreciation. These direct costs represent a short-term, survival outlook or the minimum amount of cash needed for this year. Any difference between economic and cash costs for a given year must be compensated for during a subsequent year. Cash production costs can be used to project changes in the total farm's cash flow statement. Cash receipts over and above cash production costs represent money available for family living expenses, machinery replacement, cash land rent (if land is rented), debt service (for equipment and real estate, if land is owned), expansion plans, and/or property (if land is owned), self-employment, and income (federal and state) taxes.

Cash production input levels for seed, herbicide, fungicide, and fertilizer represent recommended application rates based on results from North Dakota State University research (Aakre 1991).

Treatment of Risk

The residual return when economic costs are subtracted from gross income, once operator labor and management have been paid, represents returns to risk. Business risk is concerned with variations in returns arising from the inherent nature of crop enterprises (Lee et al. 1980). Risk is encountered in each step of the production process (such as changes in input prices, weather, and disease) to marketing (such as changes in prices received, market access, and transportation costs). Risk becomes an important factor when comparing potential returns from various crop enterprises. Generally, enterprises that offer the highest returns also have more risk associated with them. Therefore, farm managers must select crop enterprises with acceptable returns commensurate with the farmer's risk preference, financial situation, and ability to shift risk with various enterprise combinations.

Financial Impact of Recent Developments on Crop Revenue

The 1990 Farm Bill reduces government expenditures for agricultural programs by \$13 billion over the next five years (Council of Economic Advisors 1990). As part of this, farm program expenditures for 1991 are projected to continue the decline in expenditures which began in 1987 (Figure 2). Federal

government annual agricultural program expenditures are expected to fall below \$10 billion in 1991. Lower program expenditures will likely reduce gross income of North Dakota farm operators because of their substantial reliance on program payments (especially wheat).

North Dakota gross farm income from crop and livestock receipts and government payments were 55, 25, and 20 percent, respectively, on average from 1984-88 (North Dakota Agricultural Statistics Service 1990). Government payments to North Dakota farmers in 1989 were nearly \$475 million or about \$14,200 per North Dakota farm. The 1991 Farm Program will reduce gross farm income to farm operators unless higher crop and/or livestock receipts offset lower government payments.

The 1991 Farm Program lowers government expenditures by three methods. First, increased set-aside requirements reduce the number of acres a participating operator can plant to program crops. Second, the number of planted acres qualifying for government payments is reduced. Third, various user fees are initiated to offset program costs. The description of triple base in the next section illustrates the operation of the first two methods; user fees are described in a subsequent section.

Triple Base

Triple base represents a major change in the wheat and feed grain programs. It defines the three bases as historic, maximum planted, and maximum paid. The historic and planted base concepts are the same as in the 1985 Farm Bill. That is, historic base acres represent a rolling five-year average of planted and considered planted acreage of each program crop.

Dollars (millions)

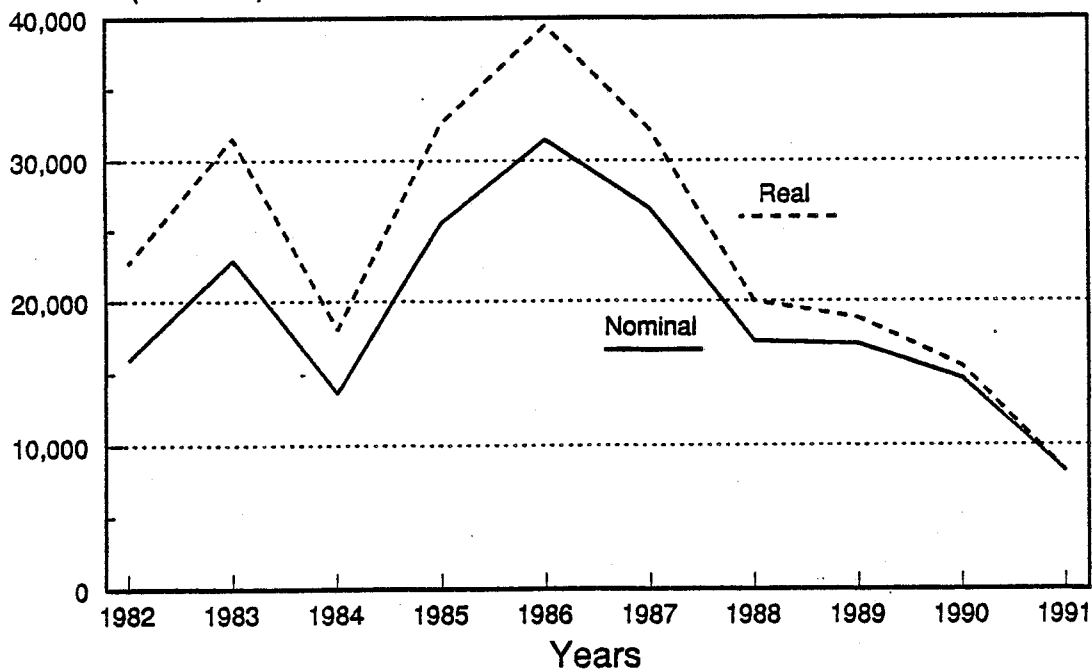


Figure 2. Federal Government Agricultural Program Expenditures, Real (Base Year=1991) and Nominal, 1982-91

Maximum planted base acres are historic base acres less mandated acres in the Acreage Conservation Reserve (ACR, or often referred to as set-aside). No program crop can be harvested on set-aside acres. An increase in set-aside for the wheat program means a decrease in the planted acres for 1991. Barley, corn, and oat have increased planted acres for 1991 (compared to 1990) because the set-aside requirements for those crops were decreased.

The third base acreage (i.e., the paid base acreage) is a new feature in the 1990 Farm Bill. This is the portion of planted base acreage on which farmers will receive government support payments. In the past, the entire planted base qualified for support payments as long as the program crop was raised on the planted base acreage. In 1991, only a portion of the planted base will be subsidized.

To replace the reduction in government subsidy, the 1991 Farm Program permits farmers to plant any crop (except fruits and vegetables, including potatoes or dry beans) on the portion of the planted base that is not subsidized. This flexibility is new; under previous farm programs, operators risked having their historic base acreage reduced if they planted it to a crop other than the program crop. The difference between the planted base and paid base is referred to as "flex acres," since the operator has the flexibility of planting different crops on this portion of the historic base. Operators can raise the program crop on flex acres, but that portion of the production will not be subsidized.

The 1991 Farm Program mandates that 15 percent of the historic base for wheat and feed grains be considered flex (normal flex acreage or NFA) and offers an additional 10 percent of the historic base as optional flex acreage (OFA). Farm operators are expected to "flex" the minimum number of acres (15 percent of historic base) to minimize the reduction in government subsidies; that is, few farmers are expected to participate in the OFA portion of the 1991 program. The exception, however, will be the operator who has an alternative crop that will generate more net revenue than subsidized wheat or feed grains. Accordingly, the analysis assumes that the maximum paid acres will be planted to the program crop.¹

Farmers will use a slightly different criterion to determine which crop to raise on the NFA; that is, the crop which earns the greatest net revenue will be raised, recognizing that planting the program crop on NFA will generate only market revenue rather than market revenue plus government subsidy. Thus, it is easier for farmers to justify planting another crop on NFA than on OFA. The limitation that potatoes and dry edible beans cannot be raised on flex acres does diminish the number of economically feasible alternative crops for some North Dakota producers.

Wheat

Comparing the financial impact of wheat production for 1991 to 1990 reveals that North Dakota wheat farmers will experience nearly a \$15 per

¹The analysis also assumes that operators will not participate in the 0-92 option of the farm program.

historic base acre reduction in gross income (before production expenses except for fallow), assuming the farmer participated in the 1990 and 1991 Farm Programs, planted only wheat on eligible acres, and produced average yields each year (Table 1). Deficiency payments per bushel are projected to be \$0.19 higher in 1991. However, total government payments will be less because the number of acres qualifying for farm program payments has been reduced by at least 25 percent compared to the 1990 Farm Program.

The market price of wheat is expected to be \$0.10 per bushel higher in 1991. However, income from crop receipts is less because of a higher ACR requirement that reduces the number of planted acres, lowering crop receipts from marketing. Additionally, economic fallow costs are projected to increase in 1991 because of a higher ACR (more fallow acres) and rising per-acre fallow expense. The reduction in gross income attributed to less paid acres, a higher ACR, and increased economic fallow costs more than offsets the projected increase in income from higher per bushel deficiency payment and market price.

The reduction in gross income per wheat base acre is the result of changes in government payments, crop receipts, and fallow costs that are caused by variations in farm program provisions (paid acres, deficiency payments, and ACRs), market prices, and per-acre fallow expenses from 1990 to 1991 (Appendix A). Over 95 percent of the reduction in gross income per wheat base acre can be attributed to changes in farm program provisions from 1990 to 1991. Nearly 75 percent of the reduction in gross income from changes in farm programs is the result of a higher ACR requirement, which in effect decreases government payments (less paid acres) and crop receipts (less planted acres) and increases fallow costs (more fallow acres). The remaining 25 percent reduction in gross income from changes in farm program provisions is the result of less paid acres due to normal flex acres. Less than 5 percent of the change in gross income per wheat base acre is due to higher fallow expenses. Higher deficiency payments and projected wheat market prices are expected to mitigate some of the decline in gross income. Similarly, a lower set-aside requirement in future years would likely bolster farm income relative to 1991.

Losses in gross crop income represent a considerable financial effect for some North Dakota farm operators. Nearly 60 percent of North Dakota farm income receipts from 1984-88 were from crops (North Dakota Agricultural Statistics Service 1990). More than 45 percent of crop cash receipts in the state during the same period were from wheat. Over 25 percent of farm cash receipts from farm marketings and government payments is directly attributed to wheat production in North Dakota. This illustrates the relative importance of wheat cash receipts on the gross income of North Dakota farmers and provides some insight to the financial impact of the 1991 farm program.

The North Dakota economy is impacted as a result of lower returns per wheat acre. On average, more than 10 million wheat acres have been planted in the state from 1986-90. A reduction of \$15 per acre translates into a state-wide gross farm income loss of \$135 million (assuming an average participation rate of 90 percent for farm operators in the government program).

TABLE 1. GROSS INCOME PER HISTORIC BASE ACRE FOR 1990 AND 1991 FOR WHEAT, BARLEY, CORN, AND OAT PRODUCTION, SOUTH CENTRAL NORTH DAKOTA

Item	1990	1991	Change from 1990	1990	1991	Change from 1990
	Wheat			Barley		
Base						
Historic (acre)	1	1		1	1	
Planted (acre)	0.95	0.85	(0.1)	0.9	0.925	0.025
Paid (acre)	0.95	0.7	(0.25)	0.9	0.775	(0.125)
Yield ¹ (bu.)	27.3	27.3	0	44.4	44.4	0
Deficiency Payment ² (\$/bu.)	\$1.28	\$1.47	\$0.19	\$0.22	\$0.47	\$0.25
Government Payment (\$/acre)	\$33.20	\$28.09	(\$5.11)	\$8.79	\$16.17	\$7.38
Market Price ³ (\$/bu.)	\$2.60	\$2.70	\$0.10	\$1.60	\$1.74 ⁴	\$0.14
Crop Receipt (\$/acre)	\$67.43	\$62.65	(\$4.78)	\$63.94	\$71.46	\$7.52
Economic Fallow Costs	\$2.20	\$7.05	\$4.85	\$4.40	\$3.53	(\$0.87)
Gross Income	\$98.43	\$83.69	(\$14.74)	\$68.33	\$84.10	\$15.77
	Corn			Oat		
Base						
Historic (acre)	1	1		1	1	
Planted (acre)	0.9	0.925	0.025	0.95	1	0.05
Paid (acre)	0.9	0.775	(0.125)	0.95	0.85	(0.1)
Yield ¹ (bu.)	65.0	65.0	0	50.0	50.0	0
Deficiency Payment ² (\$/bu.)	\$0.53	\$0.58	\$0.05	\$0.30	\$0.15	(\$0.15)
Government Payment (\$/acre)	\$31.00	\$29.22	(\$1.78)	\$14.25	\$6.38	(\$7.87)
Market Price ³ (\$/bu.)	\$2.10	\$2.00	(\$0.10)	\$1.05	\$1.05	\$0.00
Crop Receipt (\$/acre)	\$122.85	\$120.25	(\$2.60)	\$49.88	\$52.50	\$2.62
Economic Fallow Costs	\$4.40	\$3.53	(\$0.87)	\$2.20	\$0.00	(\$2.20)
Gross Income	\$149.45	\$145.94	(\$3.51)	\$61.93	\$58.88	(\$3.05)

¹Yields were supplied by the NDSU Extension Service, North Dakota State University, Fargo.

²Deficiency payments for the 1990 Farm Program are those projected by the USDA-ASCS. Payments in 1991 are USDA estimates released on December 31, 1990.

³Market prices in 1990 are estimates provided by the United States Department of Agriculture adjusted to represent North Dakota market prices. Prices in 1991 were supplied by the NDSU Extension Service, North Dakota State University, Fargo.

⁴The market price of barley represents \$1.60 and \$1.90 per bushel for feed and malting barley, respectively. The price is a weighted average of both feed (one-third) and malting barley (two-thirds). The weighted average price of malting barley was reduced by 5 percent to approximate the malting barley assessment fee charged by the government.

Thus far, the analysis assumes farm operators will continue to plant wheat on flex acres. Part of the appeal of the 1990 Farm Bill is the ability to convert wheat base acres (as well as other crop base acres) to other crops that may offer more favorable returns. As described in later sections, flex acres may offset part or all of the loss in gross farm income.

Barley

Gross returns from barley production are expected to increase nearly \$16 per historic base acre from 1990 levels (Table 1). Increased projected gross income is due to a lower ACR requirement, a higher projected deficiency payment, and a higher projected market price when compared to 1990. Changes in the ACR requirement (a decline from 10 percent in 1990 to 7.5 percent in 1991) will expand eligible planted acres by 2.5 percent. Gross farm income from crop receipts is expected to increase over \$7 per historic base acre, assuming a barley market price of \$1.74 per bushel in 1991. Additionally, a lower ACR reduces the number of fallow acres.

Projected government payments are expected to increase by more than \$7 per base acre even though paid acres are less. Part of this can be attributed to a change in the method used to estimate barley deficiency payments, which will be based on average market price for feed barley rather than all barley, starting in 1991. This change will increase the price differential between the barley target price and the average market price of feed barley and represents a \$0.25 per bushel increase in deficiency payments from 1990.

Over 65 percent of the increase in gross income per barley base acre is the result of changes in farm program provisions from 1990 to 1991 (Appendix A). Over 25 percent of this increase is the result of a lower ACR requirement, which implies more paid and planted acres and less fallow acres. Higher projected deficiency payments account for nearly 75 percent of the increase in gross income from changes in farm program provisions. Higher projected market prices increase gross income per barley base acre nearly 35 percent from 1990.

Corn

Gross income from corn production in 1991 is expected to decline more than \$3 per historic base acre compared to 1990 (Table 1). Per base acre government payments are projected to decrease nearly \$2. Government payments are anticipated to be less because of fewer paid acres. Income from crop receipts is estimated to decline by \$2.60 per historic base acre due to lower projected market price in 1991. Decreases in gross income per corn base acre can be attributed to lower market prices (96 percent) and higher fallow expenses (4 percent) (Appendix A).

Oat

Gross income from oat production is expected to decline by \$3 per historic base acre in 1991 (Table 1). The decline can be attributed to an approximate \$8 per historic base acre reduction in government payments. Lower

government payments is the result of an estimated \$0.15 per bushel reduction in deficiency payments.

All of the decline in gross income per oat base acre is the result of changes in farm program provisions (less paid acres and a lower deficiency payment) (Appendix A). A portion of the decline is offset by higher gross income due to a lower ACR requirement. No changes in gross income per base acre are expected from changes in market prices and fallow expenses.

Several important assumptions that have been incorporated into the analysis merit additional discussion. These include 1) 1991 deficiency payments for wheat, barley, and corn (on a per bushel basis) will be larger than in 1990; 2) 1991 market prices will equal or exceed those of 1990 (except for corn); and 3) both years will produce normal yields. Varying any of these assumptions will affect gross income for 1991 and the change from 1990. For example, if the increase in deficiency payment and market price for wheat is only \$0.12 per bushel (instead of the projected \$0.29), gross income per acre of historic wheat base in 1991 would be \$77.74; the change from 1990 would be a decrease of \$20.69 (rather than \$14.74). Conversely, operators who did not receive normal yields in 1990 due to drought conditions would realize a \$2.70 increase in market receipts for every bushel of additional production in 1991. Gross income for the two years would be identical if 1991 yields are 6 bushels greater than those of 1990. In other words, yields in 1991 would have to be 6 bushels per acre higher than last year to recoup the loss in gross income caused by projected changes in the wheat program and higher fallow expenses.

User Fees

The government will initiate collecting various user fees to offset some of the government's cost of the 1991 Farm Program. Fees having a direct or indirect financial impact on North Dakota farmers include a 5 percent charge on the value of malting barley² at the time of sale and a 1 percent assessment on the loan rate of processed sugar. Many questions concerning the implementation of these user fees remain unanswered at this time; thus, precisely estimating the financial impacts on North Dakota farm operators is difficult. However, the intent of these provisions is to reduce government farm program outlays. Therefore, the overall financial impact will be lower gross farm income than would be realized if these provisions did not exist.

²The fee for malting barley was designed to offset part of the increased cost of the feed grain program caused by a higher deficiency payment since the loan rate or the 5-month national average price (whichever is higher) used to determine deficiency payments will reflect only feed barley rather than both feed and malting barley. This should increase the spread between the loan rate or national average price and the target price, thereby increasing the deficiency payment. The exact method to be used to collect the fee has not been determined. However, one idea is that the fee will be assessed by the ASCS and deducted from barley deficiency payments.

Financial Impact of Recent Developments on Production Costs

The second component affecting farm income in 1991 is changing production costs. Some input expenses are expected to be higher than in 1990, others are projected to be lower, and some should be unchanged. Economic production costs for wheat, barley and oat are expected to be 2 percent to 7 percent higher than in 1990, while corn production costs may increase nearly 17 percent (Table 2).

Seed. The cost of seed is expected to be unchanged or lower, primarily because commodity prices were lower in the fall of 1990 than in the fall of 1989. For commodities such as small grains, the market price for the crop is a major determinant of seed costs for the following year. Seed cost for corn is expected to increase because U.S. corn producers rely on hybrid seed.

Fuel and Lubricants. Throughout the fall of 1990 due to the political tensions in the Middle East, fuel expenses were projected to rise dramatically (Figure 3) (USDA 1990b). Uncertainty about availability of crude oil, however, diminished and so did its market price once military action in the Persian Gulf was initiated in mid-January. Consequently, initial energy cost projections now appear high. Nevertheless, operators who purchased their fuel between August and mid-January will be using higher priced energy until they

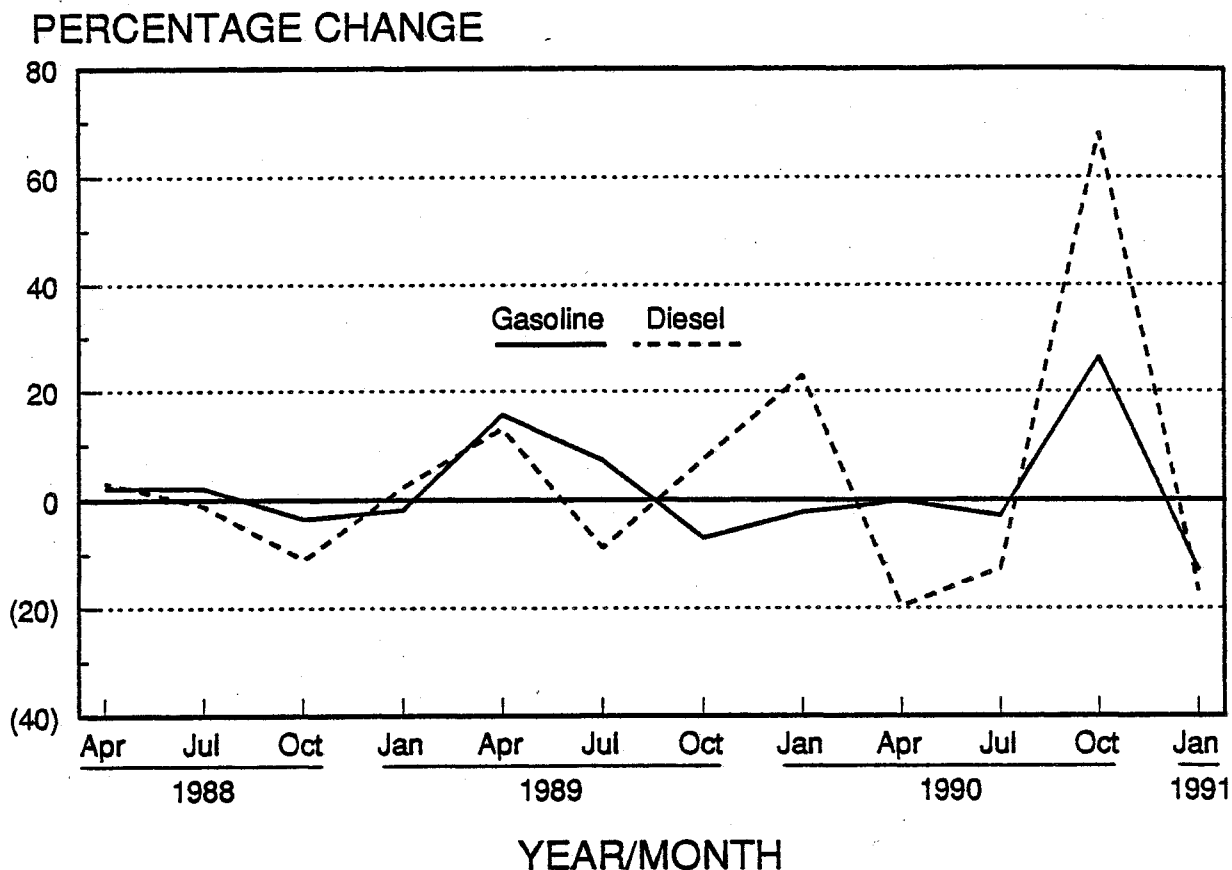


Figure 3. Percentage Change in Gasoline and Diesel Prices From the Previous Month at the Farm Level, North Dakota, Selected Months, 1988-91

TABLE 2. ECONOMIC PRODUCTION COSTS PER PLANTED ACRE FOR 1990 AND 1991 FOR WHEAT, BARLEY, CORN, AND OAT PRODUCTION, SOUTH CENTRAL NORTH DAKOTA

COSTS	Estimated 1990 (dollars)	Projected 1991 (dollars)	Difference (dollars)	Projected Change (percent)	Estimated 1990 (dollars)	Projected 1991 (dollars)	Difference (dollars)	Projected Change (percent)
Wheat				Barley				
Direct Costs								
Seed	6.88	5.63	(1.25)	(18.17)	6.38	5.25	(1.13)	(17.71)
Herbicides	9.43	4.82	(4.61)	(48.89)	9.43	4.82	(4.61)	(48.89)
Fungicides	0.99	1.00	0.01	1.01	0.95	0.95	0.00	0.00
Fertilizer	7.95	10.18	2.23	28.05	10.74	13.47	2.73	25.42
Crop Ins.	3.00	3.00	0.00	0.00	4.00	4.00	0.00	0.00
Fuel & Lube	5.08	5.58	0.50	9.84	5.08	5.58	0.50	9.84
Repairs	6.17	6.89	0.72	11.67	6.17	6.89	0.72	11.67
Drying	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	2.70	2.70	0.00	0.00	4.70	4.70	0.00	0.00
Other	1.00	1.05	0.05	5.00	1.00	1.05	0.05	5.00
Interest	2.59	2.45	(0.14)	(5.41)	2.91	2.80	(0.11)	(3.78)
Total	45.79	43.30	(2.49)	(5.44)	51.36	49.51	(1.85)	(3.60)
Indirect Costs								
Land Taxes	2.54	2.54	0.00	0.00	2.54	2.54	0.00	0.00
Machinery Investment	8.86	10.36	1.50	16.93	8.86	10.36	1.50	16.93
Machinery Depreciation	14.50	16.96	2.46	16.97	14.50	16.96	2.46	16.97
Land Investment	24.88	25.28	0.40	1.61	24.88	25.28	0.40	1.61
Total	50.78	55.14	4.36	8.59	50.78	55.14	4.36	8.59
TOTAL COSTS	96.57	98.44	1.87	1.94	102.14	104.65	2.51	2.46
Corn				Oat				
Direct Costs								
Seed	15.96	18.05	2.09	13.10	7.00	5.00	(2.00)	(28.57)
Herbicides	11.91	22.53	10.62	89.17	1.76	1.79	0.03	1.70
Fungicides	0.00	0.00	0.00	0.00	0.95	0.95	0.00	0.00
Fertilizer	12.14	15.27	3.13	25.78	7.85	10.02	2.17	27.64
Crop Ins.	8.00	8.00	0.00	0.00	4.00	4.00	0.00	0.00
Fuel & Lube	5.96	8.51	2.55	42.79	4.87	5.58	0.71	14.58
Repairs	8.44	9.52	1.08	12.80	5.96	6.89	0.93	15.60
Drying	6.50	6.50	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	6.50	6.50	0.00	0.00	5.00	5.00	0.00	0.00
Other	1.00	1.05	0.05	5.00	1.00	1.05	0.05	5.00
Interest	4.58	5.76	1.18	25.76	2.30	2.42	0.12	5.22
Total	80.99	101.69	20.70	25.56	40.69	42.70	2.01	4.94
Indirect Costs								
Land Taxes	2.54	2.54	0.00	0.00	2.54	2.54	0.00	0.00
Machinery Investment	9.21	9.94	0.73	7.93	8.86	10.36	1.50	16.93
Machinery Depreciation	15.07	16.26	1.19	7.90	14.50	16.96	2.46	16.97
Land Investment	24.88	25.28	0.40	1.61	24.88	25.28	0.40	1.61
Total	51.70	54.02	2.32	4.49	50.78	55.14	4.36	8.59
TOTAL COSTS	132.69	155.71	23.02	17.35	91.47	97.84	6.37	6.96

SOURCES: Farm Management Planning Guide: Estimated 1990 Crop Budgets (Aakre et al. 1990) and Farm Management Planning Guide: Estimated 1991 Crop Budgets (Haugen and Aakre 1991).

need to purchase additional quantities. Furthermore, changes in world politics can dramatically influence energy prices. Since it remains a volatile market even though there has been some price stability in early 1991, the analysis assumes a crude oil price of \$24 a barrel.³

Fertilizer and Chemicals. The price of crude oil also influences the costs of fertilizer and chemicals (such as herbicides) since they are petroleum-based products (USDA 1990c).⁴ Consequently, the preceding paragraph also applies to fertilizer and chemical costs. However, like fuel, lower cost crude oil may not effectively curtail higher production expenses for 1991. The cost of fertilizer and chemical that will be used during the 1991 production season manufactured, purchased by dealers, sold to farmers, and essentially priced during the months when energy prices were uncertain and higher than they have been since mid-January may be more than the cost of the same items if purchased after mid-January. It appears that fluctuating petroleum prices will not significantly affect chemical prices in 1991. Chemical expenses associated with crop production are expected to decline dramatically in 1991 due to changes in the types of chemicals applied. Fertilizer expenses are expected to increase because of higher application rates and prices in 1991.

Interest. The economic recession of early 1991 is exerting downward pressure on interest rates. Farmers with little or no debt will have lower economic production costs because lower interest rates mean they will be giving up less interest income while the capital is in the ground as production inputs rather than in the bank drawing interest. The extent to which indebted farmers will benefit from lower interest rates is less clear. These farmers will gain from decreasing interest rates only if lenders are able and willing to offer lower cost capital. The analysis assumes a 12 percent interest rate on operating capital over 6 months in 1990 and 1991. Changes in interest rate expenses would be the result of differences in direct production costs from 1990 to 1991.

Machinery and Land Costs. Economic machinery and land investments are based on the opportunity cost of capital or returns available from the next best alternative investment. Per acre average machinery investments are \$159 and \$188 in 1990 and 1991, respectively. The \$29 per acre increase represents higher machinery prices in 1991. An 8 percent opportunity cost of capital is charged on machinery investments in 1990 and 1991 with an additional 1 percent for housing and another 1 percent for insurance (10 percent in total).

³Approximately 45 percent of the fuel used by farm operators to produce a small grain crop occurs from August through November (Aakre 1991a). In 1990, the average price of crude oil for these months was \$27 per barrel (Energy Information Administration 1991). If the remaining 55 percent is used between December 1990 and July 1991 and assuming an average price per barrel during this time is \$21, the average price per barrel of oil for this one-year cropping period (August 1990 - July 1991) would be \$23.72.

⁴Fertilizer costs also are influenced by the price of natural gas, and to the extent that the price of natural gas has not reflected the recent price variation of crude oil, changes in the cost of fertilizer may not directly reflect fluctuations in crude oil prices.

Per acre land values are \$311 and \$316 per cropland acre in 1990 and 1991, respectively. Average land investments are expected to increase since land values have increased \$5 per acre (Johnson 1990). The analysis assumes an 8 percent opportunity cost of capital is charged on land investments in 1990 and 1991.

Other Inputs. This category includes such items as repairs, crop insurance premiums, hauling costs, and real estate taxes. The cost of crop insurance, drying, hauling, and land taxes are not expected to change. However, repair costs are expected to increase between 12 and 16 percent.

The financial impact of recent developments is an increase in production expenses in 1991 compared to 1990 (Table 2). Wheat production expenses are projected to rise \$2 (2 percent) per planted acre from 1990 to 1991 (Aakre et al. 1990 and Haugen and Aakre 1991). Most of the increase is the result of higher projected direct expenses for fertilizer, fuel and lubricants, and repairs. Indirect expenses are expected to increase over 8 percent from 1990 to 1991 due to higher machinery investment and depreciation.

Barley, corn, and oat production expenses are expected to increase by \$2 (2 percent), \$23 (17 percent), and \$6 (7 percent) per planted acre, respectively (Table 2). Most of the increase can be attributed to higher expenses for fertilizer, fuel, lubricants, herbicides, and machinery.

Production expenses presented in Table 2 assume an average oil price of \$24 per barrel in 1991. Potential events in the Middle East may change this estimate. To provide some insight into the sensitivity of production costs to changes in oil prices, a \$5 per barrel increase (decrease) in oil prices represents a 3 percent rise (fall) in manufactured input prices alone (USDA 1990a). If world oil prices were \$2 per barrel lower than expected, wheat production expenses for fuel and lubrication would decrease \$0.50 or 10 percent in 1991.

Recent changes in key economic indicators suggest the national economy is in a recession. The Federal Reserve Board is easing monetary policy and lowering the discount rate to stimulate economic activity. Lower interest rates offset some of the increase in production expenses. For example, a decline in interest rates of 2 percent (down to 10 percent) for operating capital would decrease economic production costs for wheat \$0.40 per planted acre in 1991.

Financial Impact of Recent Developments on Estimated Returns

The initial effect of recent developments is a decline in returns to unpaid family labor, management, and risk for wheat, corn, and oat producers compared to 1990 (Table 3). (This assumes the farmer plants the normal flex to the same crop.) Returns are projected to decline by \$7, \$28, and \$14 per base acre for wheat, corn, and oat, respectively. Returns to barley production are estimated to increase by \$11 per base acre compared to the 1990 farm program.

TABLE 3. ESTIMATED RETURNS TO UNPAID FAMILY LABOR, MANAGEMENT, AND RISK PER HISTORIC BASE ACRE FOR PARTICIPATION IN THE 1990 AND 1991 FARM PROGRAMS AND FOR 1991 NON-PARTICIPATION, WHEAT, BARLEY, CORN, AND OAT PRODUCTION, SOUTH CENTRAL NORTH DAKOTA

Item	1990 Farm Program (dollars)	1991 Farm Program (dollars)	1991 Non-Participation (dollars)	1990 Farm Program (dollars)	1991 Farm Program (dollars)	1991 Non-Participation (dollars)
	Wheat			Barley		
Gross Income ¹	98.43	83.69	73.71	68.33	84.10	79.92
Economic Production Costs ²	91.74	83.67	98.44	91.93	96.80	104.65
Return to Unpaid Family Labor, Management, and Risk	6.69	0.02	(24.73)	(23.60)	(12.70)	(24.73)
	Corn			Oat		
Gross Income ¹	149.45	145.94	130.00	61.93	58.88	52.50
Economic Production Costs ²	119.42	144.03	155.71	86.90	97.84	97.84
Return to Unpaid Family Labor, Management, and Risk	30.03	1.91	(25.71)	(24.97)	(38.96)	(45.34)

¹Gross income represents cash crop receipts, and, where appropriate, government payments and economic fallow costs for program participants. This assumes normal flex acres are planted to the same program crop.

²Production costs were reduced by the percentage of ACR for each specific crop by year for program participants.

Results show returns generated from barley and oat production, assuming participation in the 1991 Farm Program and flex acres planted to original program crop, are not sufficient to generate positive economic returns to unpaid family labor, management, and risk (Table 3). Economic returns to wheat and corn production offer some returns to labor, management, and risk. Participation in the farm program offers considerably higher per base acre returns than non-participation.

Lower gross farm income combined with higher production expenses will reduce net farm profits in 1991⁵. This is especially true of farm operators

⁵This analysis is based on average yields. For operators who suffered drought-diminished yields in 1990, the impact of recent macroeconomic developments and federal farm policy changes will not be as dramatic if 1991 yields are normal. This is little consolation, however, if cash flow was inadequate in 1990 or if the drought continues into 1991. Operators who had above-normal yields in 1990 may experience a reduction in income if 1991 yields are normal or below normal.

who cannot lower production costs through increased efficiencies and/or have intermediate- and long-term debt to service. Past research indicates North Dakota farmers with debt-to-asset ratios of .7 or more would likely experience extreme financial stress as a result of lower farm profits (Leistritz et al. 1989). This threshold debt-to-asset ratio will move lower if the profit margin for the agricultural economy experiences a downturn.

Generally, low or negative economic returns represent a long-run financial problem that has to be corrected at some future time. However, production can continue for the coming year or, in some instances, several years. Low or negative returns indicate that a producer should evaluate the feasibility of producing these crops or that some changes in the production or marketing process should be made. Farm managers may need to examine potential returns provided by less traditional crops on normal flex acres to increase potential returns to labor, management and risk.

Financial Impact of Normal Flex Acres

The 1991 Farm Program was designed to provide farmers an opportunity to plant a portion of each crop base to another crop (flex acres) without jeopardizing historic bases. The intent of the program is to allow farm operators a chance to respond more to market forces rather than to incentives created by public (government) policy. The federal government is trying to maintain some level of financial security for farmers while reducing federal government outlays for farm programs and continuing the transition to a more market-oriented agriculture. Ideally, returns obtainable on flex acres would be enough to offset part or all of the reduction in government farm program expenditures.

Returns available from participation in wheat, barley, corn, and oat programs are marginal, assuming the farm operator does not take advantage of the normal flex option. However, other cropping opportunities may exist that provide returns exceeding those obtainable from program crops. This would allow the farm operator to possibly regain part or all of gross farm income lost as a result of the triple base.

Applying the triple base to an average farm in this region suggests that approximately 140 acres could apply toward normal flex acres or about 12 percent of the farm's tillable acres. While this does not represent a large portion of the farm's acreage, it may mean the difference between a profit or a loss.

Examining returns (excluding government payments) to unpaid labor, management, and risk for various crop enterprises in south central North Dakota reveals that buckwheat is the only crop with positive economic returns per planted acre (Table 4). Farm operators with the machinery and management expertise to produce and market buckwheat may want to consider this option on their flex acres. However, managers must be willing and able to accept additional business risk associated with the buckwheat enterprise before considering this option. Another less traditional crop enterprise that offers slightly negative economic returns is millet.

TABLE 4. RETURNS (EXCLUDING GOVERNMENT PAYMENTS) TO UNPAID LABOR, MANAGEMENT, AND RISK PER PLANTED ACRE FOR VARIOUS CROPS, SOUTH CENTRAL NORTH DAKOTA, 1991

Item	Buckwheat	Millet	Oil Sunflower	Soybeans	Malting Barley	Spring Wheat	Corn	Flax	Oat
MARKET INCOME¹									
(\$/acre)									
Price/bus. or lbs.	12.00	0.05	0.087	5.35	1.90	2.70	2.00	4.88	1.10
Yield/acre	8.25	1,667.00	1,170.00	19.00	44.40	27.30	65.00	13.00	50.00
Total	99.00	83.35	101.79	101.65	84.36	73.71	130.00	63.44	55.00
ECONOMIC PRODUCTION COSTS									
(\$/acre)									
Direct	33.36	35.56	63.05	62.65	49.51	43.30	101.69	43.67	42.70
Indirect	53.95	55.14	50.60	53.11	55.14	55.14	54.02	55.14	55.14
Total	87.31	90.70	113.65	115.76	104.65	98.44	155.71	98.81	97.84
RETURN TO UNPAID LABOR, MANAGEMENT, AND RISK									
(\$/acre)									
	11.69	(7.35)	(11.86)	(14.11)	(20.29)	(24.73)	(25.71)	(35.37)	(42.84)

¹Government payments are not included. Income reflects production on normal flex or non-program acres.

SOURCE: Farm Management Planning Guide: Estimated 1991 Crop Budgets (Haugen and Aakre 1991)

Farmers unable (because of machinery or management restrictions) or unwilling to accept the inherent risk associated with buckwheat or millet may want to consider planting normal flex acres to more traditional crops for this area. Traditional crops will likely provide lower returns but with less risk. Oil sunflower appears to offer the most favorable returns of traditional crops grown in the south central region of North Dakota (Table 4).

Assuming a farmer decides to plant normal wheat flex acres to oil sunflower, wheat base acre returns to unpaid family labor, management, and risk are projected to be \$1.95 (Table 5). The difference between the 1990 and 1991 wheat programs, assuming wheat is planted on flex acres, is a \$6.67 reduction per historic base acre. The difference between the 1990 and 1991 wheat programs, assuming oil sunflower are planted on flex acres, is a \$4.74 reduction per historic base acre. Although returns are marginal, they represent an increase of \$1.93 ($\$1.95 - \0.02) per historic base acre when compared to planting wheat on normal wheat flex acres in 1991. This illustrates that returns from some non-program or less traditional crops can be used to offset some of the income lost due to lower overall government payments. However, all gross income lost as a result of lower government program payments may not be recovered through normal flex acres.

Over 70 percent of the reduction in historic base acre returns to unpaid labor, management, and risk is the result of changes in farm program provisions (Appendix B). The remaining 30 percent is the result of increased production expenses. Over 65 percent of the reduction in returns from farm program changes is due to a higher ACR requirement. The remaining 35 percent is the result of flex acres. Lower returns as a result of increased production expenses and changes in farm program provisions more than offset returns from projected higher market prices.

Faced with the prospect of lower per acre returns in 1991, farm operators will need to develop management strategies to operate more efficiently and/or reduce production expenses. However, most potential operating efficiencies may have been realized since farmers have faced consecutive years of financial stress combined with drought. Most direct and indirect production expenses may be incurred with little, if any, room for adjustments. One exception may be cash rents.

Lower gross incomes combined with higher production expenses reduce returns generated by farmland. In the short run, lower returns to farmland should exert downward pressure on cash rental rates. Farmers cash renting land may want to renegotiate rental contracts to incorporate lower projected returns.

Financial Impact of Cash Production Costs

Up to this point, the study has focused on long-run or economic costs of production. However, given the frequency with which market prices fluctuate, government programs change, and the impending implications of a breakdown in the GATT talks (i.e., support levels may be reinstated in 1992), farm managers may want to consider only short-run implications and use cash rather than economic production costs. Cash production costs can be used to approximate a

TABLE 5. RETURNS TO UNPAID FAMILY LABOR, MANAGEMENT, AND RISK PER HISTORIC WHEAT BASE ACRE ENROLLED IN THE 1990 AND 1991 FARM PROGRAMS, SOUTH CENTRAL NORTH DAKOTA, 1991

Item	Wheat 1990 Farm Program	Wheat Only 1991 Farm Program	Wheat/Sunflower Flex 1991 Farm Program			Change From 1990
			Wheat Portion	Sunflower Portion	Wheat/sunflower Combined	
Base						
Historic (acre)	1	1	1	n/a	1	0
Planted (acre)	0.95	0.85	0.7	0.15	0.85	(0.1)
Paid (acre)	0.95	0.7	0.7	n/a	0.7	(0.25)
Yield (bu. or lbs.)	27.3	27.3	27.3	1,170.0	n/a	n/a
Deficiency Payment (\$/bu.)	\$1.28	\$1.47	\$1.47	n/a	n/a	n/a
Government Payment (\$/acre)	\$33.20	\$28.09	\$28.09	n/a	\$28.09	(\$5.11)
Market Price (\$/bu. or lbs.)	\$2.60	\$2.70	\$2.70	\$0.087	n/a	n/a
Crop Receipt (\$/acre)	\$67.43	\$62.65	\$51.60	\$15.27	\$66.87	(\$0.56)
Economic						
Fallow Costs	\$2.20	\$7.05	\$7.05	n/a	\$7.05	\$4.85
Gross Income (\$/acre)	\$98.43	\$83.69	\$72.64	\$15.27	\$87.91	(\$10.52)
Economic Cost (\$/acre)	\$91.74 ¹	\$83.67 ¹	\$88.91 ¹	\$17.05 ²	\$85.96	(\$5.78)
Return to Unpaid Labor, Management, and Risk (\$/acre)	\$6.69	\$0.02	\$3.73	(\$1.78)	\$1.95	(\$4.74)

¹Cost was reduced by the percentage of ACR for the program crop.

²Cost was adjusted by the percentage of the acre actually planted.

short-run farm financial situation. Returns over and above cash production expenses represent money available for family living (including income and self-employment taxes), machinery replacement, land rent, debt service, expansion plans, and/or property taxes.

Examining cropping options available for normal flex acres in south central North Dakota, assuming direct cash production costs, indicates that all crops can provide positive cash flow (Table 6). Cash flows range from \$70 per planted acre for buckwheat to \$20 per planted acre for oat. Crops generating relatively high net cash flows are buckwheat and millet. Again, farm managers must have the management expertise to produce these non-traditional crops (relative to this region of the state) and should weigh the risk/return trade-offs to determine their willingness and ability to accept the risk associated with these crops.

TABLE 6. MARKET INCOME AND DIRECT CASH PRODUCTION COSTS PER PLANTED ACRE FOR VARIOUS CROPS, SOUTH CENTRAL NORTH DAKOTA, 1991

Item	Buckwheat	Millet	Malting Barley	Oil Sunflower	Soybeans	Corn	Spring Wheat	Flax	Oat
Market Income (\$/acre)									
Price/bus. or lbs.	12.00	0.05	1.90	0.087	5.35	2.00	2.70	4.88	1.10
Yield/acre	8.25	1,667.00	44.40	1,170.00	19.00	65.00	27.30	13.00	50.00
Total	99.00	83.35	84.36	101.79	101.65	130.00	73.71	63.44	55.00
Direct Cash Production Costs (\$/acre)									
	30.20	27.93	39.62	57.24	58.80	91.92	36.04	37.69	34.79
Difference ¹ (\$/acre)									
	68.80	55.42	44.74	44.55	42.85	38.08	37.67	25.75	20.21

¹Returns available to pay expenses such as family living, machinery replacement, land rent, debt service, and/or property taxes.

SOURCE: Farm Management Planning Guide: Estimated 1991 Crop Budgets (Haugen and Aakre 1991)

Incorporating direct cash production expenses into the base wheat acre analysis and assuming oil sunflower is planted on normal wheat flex acres, net cash flow is projected to be nearly \$57 per base acre (Table 7). This represents a reduction of \$4 (6 percent) per wheat base acre compared to the 1990 Farm Program. However, the oil sunflower normal flex on wheat base acres will produce returns \$1 per wheat base acre higher than planting wheat on normal flex acres. Other crop alternatives on flex acres may allow farmers to increase base acre returns over and above those presented earlier.

TABLE 7. NET CASH FLOW PER HISTORIC WHEAT BASE ACRE ENROLLED IN THE 1990 AND 1991 FARM PROGRAMS, SOUTH CENTRAL NORTH DAKOTA, 1991

Item	Wheat 1990 Farm Program	Wheat Only 1991 Farm Program	Wheat/Sunflower Flex 1991 Farm Program			Change From 1990
			Wheat Portion	Sunflower Portion	Wheat/sunflower Combined	
Base						
Historic (acre)	1	1	1	n/a	1	0
Planted (acre)	0.95	0.85	0.7	0.15	0.85	(0.1)
Paid (acre)	0.95	0.7	0.7	n/a	0.7	(0.25)
Yield (bu. or lbs.)	27.3	27.3	27.3	1,170.0	n/a	n/a
Deficiency Payment (\$/bu.)	\$1.28	\$1.47	\$1.47	n/a	n/a	n/a
Government Payment (\$/acre)	\$33.20	\$28.09	\$28.09	n/a	\$28.09	(\$5.11)
Market Price (\$/bu. or lbs.)	\$2.60	\$2.70	\$2.70	\$0.087	n/a	n/a
Crop Receipt (\$/acre)	\$67.43	\$62.65	\$51.60	\$15.27	\$66.87	(\$0.56)
Cash Fallow Costs	\$1.28	\$4.30	\$4.30	n/a	\$4.30	\$3.02
Gross Income (\$/acre)	\$99.35	\$86.44	\$75.39	\$15.27	\$90.66	(\$8.69)
Direct Cash Cost (\$/acre)	\$38.99 ¹	\$30.63 ¹	\$25.23 ¹	\$8.59 ²	\$33.82	(\$5.17)
Net Cash Flow (\$/acre)	\$60.36	\$55.81	\$50.16	\$6.68	\$56.84	(\$3.52)

¹Cost was reduced by the percentage of ACR for the program crop and excludes land and machinery fixed (indirect) costs.

²Cost was adjusted by the percentage of the acre actually planted.

Farm Financial Impacts

Provisions of the 1990 and 1991 Farm Programs were applied to crop enterprises for an average crop farm operating in south central North Dakota to estimate the financial impact of changes in farm programs and production costs. Projected returns from the 1990 Farm Program are compared to the 1991 Farm Program both with and without normal flex acres. Differences in returns would be the result of changes in both farm income (market income and government payments) and production expenses. Production expenses included direct cash costs, excluding land and machinery investments and depreciation. As stated earlier, the difference between gross farm income and direct cash expenses would be returns available for family living (including income and self-employment taxes), machinery replacement, debt service, land rent, and/or property taxes.

Net cash flows per base acre were estimated for typical crops produced on an average farm in this area for both the 1990 and 1991 Farm Programs (Table 8). It was assumed that oil sunflower would be planted on normal flex acres (Table 9). Net cash flows for an average farm were estimated by multiplying per base acre returns by the number of base acres for each crop.

Net cash flow per historic base acre is expected to be lower for wheat (\$4), corn (\$22), and oat (\$1) in 1991 (Table 10). All of the decrease in wheat cash flow per acre can be attributed to changes in farm program provisions from 1990 to 1991 (Appendix C). Over 60 percent of the decrease attributable to changes in farm programs is due to a higher ACR requirement in 1991. The remaining decrease due to changes in farm program provisions (40 percent) is the result of flex acres. The decrease in corn cash flow is due to increased production expenses (80 percent) and a lower market price (20 percent) in 1991. Lower oat cash flow is entirely due to changes in farm program provisions.

Barley net cash flow is projected to increase nearly \$20 per historic base acre. Over 50 percent of the increase is due to changes in farm program provisions (Appendix C). Changes in market prices (28 percent) and production expenses (21 percent) account for the remaining increase in net cash flow.

An average farm in this area was projected to have a net cash flow exceeding \$72,900 in 1990 (Table 11). Net cash flows were projected at \$60,900 in 1991 with no flex (planting the same program crop on flex acres) and \$62,000 with a sunflower flex. This suggests that an average farm will experience a \$10,900 (15 percent) reduction in net cash flow as a result of changes in farm programs and production expenses.

TABLE 8. NET CASH FLOW PER BASE ACRE, VARIOUS CROPS PRODUCED IN SOUTH CENTRAL NORTH DAKOTA, 1990 AND 1991

Item	1990	1991	1990	1991	1990	1991	1990	1991	1990	1991
	Wheat		Barley		Corn		Oat		Sunflower	
Base										
Historic (acre)	1	1	1	1	1	1	1	1	1	1
Planted (acre)	0.95	0.85	0.9	0.925	0.9	0.925	0.95	1	1	1
Paid (acre)	0.95	0.7	0.9	0.775	0.9	0.775	0.95	0.85	1	1
Yield/ac ¹	27.3 bu	27.3 bu	44.4 bu	44.4 bu	65.0 bu	65.0 bu	50.0 bu	50.0 bu	1,170 lbs	1,170 lbs
Deficiency Payment ² (\$/bu)	\$1.28	\$1.47	\$0.22	\$0.47	\$0.53	\$0.58	\$0.30	\$0.15	n/a	n/a
Government Payment (\$/acre)	\$33.20	\$28.09	\$8.79	\$16.17	\$31.00	\$29.22	\$14.25	\$6.38	\$0.00	\$0.00
Market Price ³	\$2.60	\$2.70	\$1.60	\$1.74 ⁴	\$2.10	\$2.00	\$1.05	\$1.05	\$0.12	\$0.087
Crop Receipt (\$/acre)	\$67.43	\$62.65	\$63.94	\$71.46	\$122.85	\$120.25	\$49.88	\$52.50	\$140.40	\$101.79
Cash Fallow Costs (\$/acre)	\$1.28	\$4.30	\$2.56	\$2.15	\$2.56	\$2.15	\$1.28	\$0.00	\$0.00	\$0.00
Gross Income (\$/acre)	\$99.35	\$86.44	\$70.17	\$85.48	\$151.29	\$147.32	\$62.85	\$58.88	\$140.40	\$101.79
Direct Cash Cost (\$/acre)	\$38.99	\$30.63	\$39.89	\$36.65	\$65.63	\$85.03	\$33.51	\$34.79	\$54.05	\$57.24
Net Cash Flow (\$/acre)	\$60.36	\$55.81	\$30.28	\$48.83	\$85.66	\$62.29	\$29.34	\$24.09	\$86.35	\$44.55

¹Yields were supplied by the NDSU Extension Service, North Dakota State University, Fargo.

²Deficiency payments for the 1990 Farm Program are those projected by the USDA-ASCS. Payments in 1991 are USDA estimates released on December 31, 1990.

³Market prices in 1990 are estimates provided by the United States Department of Agriculture adjusted to represent North Dakota market prices. Prices in 1991 were supplied by the NDSU Extension Service, North Dakota State University, Fargo.

⁴The market price of barley represents \$1.60 and \$1.90 per bushel for feed and malting barley, respectively. The price is a weighted average of both feed (one-third) and malting barley (two-thirds). The weighted average price of malting barley was reduced by 5 percent to approximate the malting barley assessment fee charged by the government.

TABLE 9. NET CASH FLOW PER HISTORIC BASE ACRE FOR PROGRAM CROPS IF SUNFLOWER ARE PLANTED ON NORMAL FLEX ACRES, SOUTH CENTRAL NORTH DAKOTA, 1991

Item	Wheat			Barley			Corn			Oat		
	Wheat Portion	Sunflower Portion	Wheat/Sunflower Combined	Barley	Sunflower Portion	Barley/Sunflower Combined	Corn	Sunflower Portion	Corn/Sunflower Combined	Oats	Sunflower Portion	Oat/Sunflower Combined
Base												
Historic (acre)	1	n/a	1	1	n/a	1	1	n/a	1	1	n/a	1
Planted (acre)	0.7	0.15	0.85	0.775	0.15	0.925	0.775	0.15	0.925	0.85	0.15	1
Paid (acre)	0.7	n/a	0.7	0.775	n/a	0.775	0.775	n/a	0.775	0.85	n/a	0.85
Yield ¹ (bu. or lbs.)	27.3	1,170.0	n/a	44.4	1,170.0	n/a	65.0	1,170.0	n/a	50.0	1,170.0	n/a
Deficiency Payment ² (\$/bu.)	\$1.47	n/a	n/a	\$0.47	n/a	n/a	\$0.58	n/a	n/a	\$0.15	n/a	n/a
Government Payment (\$/acre)	\$28.09	n/a	\$28.09	\$16.17	n/a	\$16.17	\$29.22	n/a	\$29.22	\$6.38	n/a	\$6.38
Market Price ³ (\$/bu. or lbs.)	\$2.70	\$0.087	n/a	\$1.74 ⁴	\$0.087	n/a	\$2.00	\$0.087	n/a	\$1.05	\$0.087	n/a
Crop Receipt (\$/ac)	\$51.60	\$15.27	\$66.87	\$59.87	\$15.27	\$75.14	\$100.75	\$15.27	\$116.02	\$44.63	\$15.27	\$59.90
Cash Fallow Costs (\$/acre)	\$4.30	n/a	\$4.30	\$2.15	n/a	\$2.15	\$2.15	n/a	\$2.15	\$0.00	n/a	\$0.00
Gross Income (\$/ac)	\$75.39	\$15.27	\$90.66	\$73.89	\$15.27	\$89.16	\$127.82	\$15.27	\$143.09	\$51.01	\$15.27	\$66.28
Direct Cash Cost (\$/acre)	\$25.23	\$8.59	\$33.82	\$30.71	\$8.59	\$39.30	\$71.24	\$8.59	\$79.83	\$29.57	\$8.59	\$38.16
Net Cash Flow (\$/acre)	\$50.16	\$6.68	\$56.84	\$43.18	\$6.68	\$49.86	\$56.58	\$6.68	\$63.26	\$21.44	\$6.68	\$28.12

¹Yields were supplied by the NDSU Extension Service, North Dakota State University, Fargo.

²Deficiency payments for the 1990 Farm Program are those projected by the National Agricultural Statistics Service. Payments in 1991 are USDA estimates released on December 31, 1990.

³Market prices in 1990 are estimates provided by the United States Department of Agriculture adjusted to represent North Dakota market prices. Prices in 1991 were supplied by the NDSU Extension Service, North Dakota State University, Fargo.

⁴The market price of barley represents \$1.60 and \$1.90 per bushel for feed and malting barley, respectively. The price is a weighted average of both feed (one-third) and malting barley (two-thirds). The weighted average price of malting barley was reduced by 5 percent to approximate the malting barley assessment fee charged by the government.

TABLE 10. NET CASH FLOW PER HISTORIC BASE ACRE FOR WHEAT, BARLEY, CORN, AND OAT PRODUCTION WITH A SUNFLOWER FLEX, SOUTH CENTRAL NORTH DAKOTA, 1990 AND 1991

Item	Change from			Change from		
	1990	1991	1990	1990	1991	1990
	Wheat			Barley		
	----- dollars per acre -----					
Government Payment	33.20	28.09	(5.11)	8.79	16.17	7.38
Crop Receipt (+)	67.43	66.87	(0.56)	63.94	75.14	11.20
Cash Fallow Costs (-)	1.28	4.30	3.02	2.56	2.15	(0.41)
Gross Income	<u>99.35</u>	<u>90.66</u>	<u>(8.69)</u>	<u>70.17</u>	<u>89.16</u>	<u>18.99</u>
Direct Cash Cost (-)	38.99	33.82	(5.17)	39.89	39.30	(0.59)
Net Cash Flow	<u>60.36</u>	<u>56.84</u>	<u>(3.52)</u>	<u>30.28</u>	<u>49.86</u>	<u>19.58</u>
	Corn			Oat		
Government Payment	31.00	29.22	(1.78)	14.25	6.38	(7.87)
Crop Receipt (+)	122.85	116.02	(6.83)	49.88	59.90	10.02
Cash Fallow Costs (-)	2.56	2.15	(0.41)	1.28	0.00	(1.28)
Gross Income	<u>151.29</u>	<u>143.09</u>	<u>(8.20)</u>	<u>62.85</u>	<u>66.28</u>	<u>3.43</u>
Direct Cash Cost (-)	65.63	79.83	14.20	33.51	38.16	4.65
Net Cash Flow	<u>85.66</u>	<u>63.26</u>	<u>(22.40)</u>	<u>29.34</u>	<u>28.12</u>	<u>(1.22)</u>

TABLE 11. NET CASH FLOW FOR AN AVERAGE FARM OPERATING IN SOUTH CENTRAL NORTH DAKOTA, 1990 FARM PROGRAM, 1991 FARM PROGRAM WITH NO FLEX, AND 1991 FARM PROGRAM WITH SUNFLOWER ON NORMAL FLEX ACRES

Crop	Base Acres	1990 Farm Program		1991 Farm Program No Flex		1991 Farm Program With Flex	
		Returns Per Acre (\$)	Total (\$)	Returns Per Acre (\$)	Total (\$)	Returns Per Acre (\$)	Total (\$)
Wheat	670	60.36	40,441	55.81	37,393	56.84	38,083
Sunflowers	260	86.35	22,451	44.55	11,583	44.55	11,583
Barley	170	30.28	5,148	48.83	8,301	49.86	8,476
Corn	45	85.66	3,855	62.29	2,803	63.26	2,847
Oat	35	29.34	1,027	24.09	843	28.12	984
Total	<u>1,180</u>	n/a	<u>72,922</u>	n/a	<u>60,923</u>	n/a	<u>61,973</u>
Average	n/a	61.80	n/a	51.63	n/a	52.52	n/a

Net cash flow was projected at over \$62 per base acre in 1990. Net cash flow was estimated at \$52 per acre in 1991. This implies that net cash flow is projected to decline by \$10 per acre from 1990 to 1991.

Applying a \$10 per acre reduction in net cash flow to the financial characteristics of a panel of North Dakota farm operators (Leistritz et al. 1990) reveals that nearly 14 percent of farmers will move from a positive to a negative income position in 1991. This implies that 14 percent of the crop farmers⁶ in the state are likely to experience extreme financial stress to the point of negative cash flow in the coming year. Another 20 percent of crop farmers will experience financial difficulties if net cash flow per base acre should decline an additional \$10 per base acre.

Implications

Lower net cash flows available to support the farm will have a considerable impact on farm finances. The extent of the impact will depend on the financial structure of the farm business. The amount of farm debt is a major factor in assessing the financial extent and impact of lower net cash flows.

Reduced net cash flow will have both short- and long-term effects. Lower cash flow may reduce farm income in the short run if the farm is unable to become more efficient by lowering production expenses. If net cash flow is reduced for an extended time period, the long-term results may be a reduction in land values.

Farm Finances

The \$52 per base acre average net farm cash flow represents returns available to pay family living, machinery replacement, land rent, debt service, property taxes and/or other capital investments in 1991. Family living expenses may be higher in 1991 because of inflation. A survey of loan officers estimated family living expenses to be in a range of \$15,000 to \$25,000 per farm family (Beyer 1990). The midpoint of this range (\$20,000) translates into \$17 per base acre fixed cash cost for an average North Dakota crop farm. Farm families with more or less than 1,180 base acres or needing more or less than \$20,000 per year in family living expenses will have a different expense per acre. (The important aspect is to assess a direct cash cost to cover family living expenses!) Also, additional non-farm income can reduce the family's reliance on the farm to meet its living expenses. Approximately \$35 net cash flow per base acre remains after deducting a \$17 per base acre expense for family living.

Direct cash expenses for land taxes are estimated at \$2.54 per acre for an average south central North Dakota farm (Haugen and Aakre 1991). The mean debt-to-asset ratio of North Dakota crop farms was estimated at 35 percent in 1989 (Leistritz et al. 1990). This implies machinery and land debt service of

⁶Farmers operating in the counties adjacent to the Red River and/or involved in livestock production were excluded from the analysis.

\$14.04 and \$11.40 per base acre, respectively. Deducting land taxes and machinery and land debt service produces a net cash flow of \$7 per acre.

The remaining \$7 per acre net cash flow can be used to pay for additional capital replacement and debt service (if the farm operator has a debt-to-asset ratio above 35 percent). Net cash flow becomes negative for crop farm operators who have debt-to-asset ratios of 45 percent or more. Approximately 35 percent of a panel of North Dakota crop farmers have debt-to-asset ratios of 45 percent or more (Leistriz et al. 1990).

These farm operators face significant financial difficulties in 1991. This is especially true if farmers in this group are unable (or unwilling) to reduce family living expenses and/or cannot decrease machinery replacement expenses. Farm operators in this situation will have to develop financial strategies to lower direct cash expenses to improve net cash flow.

Farm Financial Strategies

Strategies to improve net cash flow might include postponing capital replacement, extending debt repayment, and reducing cash land costs. Postponing capital replacement creates a situation where the farm operator is depreciating (a reduction in the value of an asset because of use) a capital asset faster than it is being replaced. In essence, the farm operator is using the equity portion of the asset to enhance the farm's cash flow situation. Continuing this practice over many years suggests that the farm operator will be unable to maintain the same level of capital assets without adding additional debt as capital assets need to be replaced. Postponing replacement should be viewed as a short-term survival alternative that must be corrected when the farm's financial situation improves.

Net cash flow can be enhanced by extending the time period of debt repayment. This suggests the farm operator pays either a reduced amount of principle plus interest incurred or possibly only the interest portion on the remaining principle. The effect of this strategy in the near term is to lower the current year's cash expenses; however, the long-term implication is extending the loan duration an additional year.

Farm net cash flow can be increased by lowering direct cash land cost. Farm operators cash renting land may be able to reduce direct cash expenses by negotiating lower land rental rates with their landlords. Lower net cash flows generated by crop enterprises could exert downward pressure on cash rental rates. Cash rental rates represent the ability of the land to generate economic returns. If land produces less returns, then returns to land and the landowner will likely adjust accordingly. Lower crop enterprise returns in the short term could reduce cash rental rates. If lower land returns continue for an extended time period, eventually land values will decline.

North Dakota Farmland Values

One economic theory suggests that farmland should be assessed based on the value of the products produced from the land (Boehlje and Eidman 1984). Using this definition, the value of farmland can be estimated by dividing net

cash returns per acre by an appropriate capitalization rate, both representing long-term conditions and values. Net cash returns are calculated by subtracting per acre cash farm expenses and the value of the operator's and unpaid family labor from the total cash farm receipts.

Results from this study indicate that at least in the short term, net cash returns will be reduced. If lower returns exist for only one year and then recover, adjustments in farmland values may not be necessary. However, if lower returns persist for several years, the long-term implications are reduced farmland values as potential buyers bid less for farmland based on the value of its productivity.

Results suggest a 15 percent reduction in net cash returns for an average North Dakota farm in 1991. If farm income remains at this level in the future and the capitalization rate is constant, land values should decline an equivalent amount. This implies that average farmland values in the south central portion of the state would decline \$47 (\$316 per acre x 15 percent decline in land value) per acre⁷. Given the continuing direction of government farm policy and limited demand for U.S. agricultural products, lower farmland values in the years ahead seem plausible. However, a breakdown in the GATT negotiations will likely result in additional farm subsidies, higher farm income, and upward pressure on North Dakota land values in future years.

Lower farmland values adversely affect the net worth of existing farm operators and may hinder them in obtaining more credit. However, reduced land prices are an opportunity for beginning farmers. Lower farmland values reduce the capital requirements necessary to establish and maintain a farm business. As a result, beginning farmers may be in a more favorable financial position than some existing indebted farm operators.

North Dakota Farm Income

The average North Dakota crop farm is projected to experience nearly an \$11,000 reduction in farm income during 1991 compared with 1990⁸. North Dakota has approximately 17,200 farms (49 percent) that produce only crops (North Dakota Agricultural Statistics Service 1990). (North Dakota had an estimated 35,000 farms in 1989.) This implies that farm income in North Dakota may decline by as much as \$189 million in 1991. However, some of the decline in farm income from crops may be offset through increases in farm income from livestock operations.

⁷If persons interested in purchasing farmland are willing to accept a lower rate of return in the future because of the recession and diminished interest rates, the capitalization rate for land will drop, which in turn suggests that the rate of decline in farmland values should be less than the rate of decrease in returns to the land.

⁸This assumes that the characteristics of non-Valley crop farmers participating in the farm panel are representative of all crop farms in the state.

The amount of decline in farm income will depend on the farm operator's ability to lower production expenses and/or increase cash receipts from farm marketings. Farmers might lower production expenses by becoming more efficient and/or adopting new technologies into the production process. Cash receipts can be enhanced, depending upon the ability of the farmer to take advantage of market opportunities (something the 1991 farm program is designed to accommodate). Farm operators must be willing and able to change crop enterprise combinations and aggressively seek marketing alternatives to ensure the highest possible returns, considering the farmer's risk preference. The amount of farm income the crop farm operator will be able to recoup will depend in part on his management abilities.

Policy Alternatives

Even though the 1991 Farm Bill will lead to lower government subsidies and reduce revenue for some producers, it may be a better alternative for maintaining farm income than others considered at the time. Clearly, society, through Congress and the 1991 Farm Bill, was going to reduce government expenditures for farm programs. The important remaining question was the process by which the goal of reduced government costs would be accomplished.

One strategy to reach the goal would have been to reduce target prices. If this had been the only change, however, producers would still be required to produce specified program crops on their historic base acreage. This option would lead to reduced farm revenue without any opportunity to receive income from alternative commodities.

Another strategy would have been to increase the set-aside requirement which reduces farmer revenue while increasing fallow costs. Again, the strategy would provide no opportunity to alter the farm business to compensate for lower revenue.

A third possibility would have been to reduce everyone's historic base, but then farmers could only plant the unrestricted acreage to non-program crops.

A fourth alternative would have been to provide each farmer with a level of income support regardless of the commodities being produced. This proposal (sometimes referred to as "decoupling") would reduce or eliminate the relationship between a farmer's government subsidy and the type or quantity of commodities produced by the operator. Under the proposal, commodity prices would be determined by market forces. Farm income initially would be maintained by direct payments to farmers based on past production levels, but payments would be reduced over a period of several years. Decoupling is considered a mechanism for increasing the market orientation of U.S. agriculture. However, substantial political opposition surrounded this proposal due to high initial start-up cost, reduction in long-run income support, and the connotation of a direct government transfer payment.

Given that farm subsidies would be reduced and the lack of support for decoupling, the flexibility program was attractive. It provides a relatively stable revenue for program crops produced as part of the farm program (that is, no change in target prices), plus it provides producers an opportunity to

raise other crops and respond to market prices, including those for program crops, to maximize net revenue.

The advantage the flexibility program offers over other alternatives does not eliminate the question of whether the program is being administered equitably among program commodities. Nor does it prohibit groups of citizens and politicians from trying to convince society to reinstate or replace former subsidies. These questions are beyond the scope of this report. The goal of this study is to estimate how much farm revenue may change due to recent developments so farmers and rural businesses can plan for the future.

Some farmers will readily adjust their business operations in response to lower revenue and altered program policies by planting alternative crops or increasing production efficiency. Others may reduce the cost of their resources, such as negotiating lower land rents. Landowners will need to recognize that their property is not as valuable as it may have been if its income-generating capacity had not been reduced. Other farmers may seek to lower their per-acre fixed cash expenses, especially family living, by increasing acreage or reducing the amount of family living they intend to draw from the farm business. Each operation is unique; probably the only commonality is that management will be more critical.

Conclusions

Lower government expenditures combined with rising production expenses suggest a reduction in net farm income in 1991 barring any significant improvement in agricultural commodity market prices. Thus, some North Dakota farm operators may be facing another round of financial stress in 1991.

Wheat production accounts for over 45 percent of income for crop farms in North Dakota. With revenue per historic wheat base acre projected to decline approximately \$15 in 1991 compared to 1990, North Dakota farmers appear to be facing a considerable drop in farm income. This is especially true considering most farms in the state have limited economically viable cropping alternatives because of climatic conditions that exist during the growing season and current commodity market opportunities.

Projected farm income declines combined with higher production expenses imply that farm operators in North Dakota will likely have less income available for capital replacement, debt service, and family living in 1991. Some will even generate a negative cash flow. This is especially true for North Dakota crop farm operators having debt-to-asset ratios exceeding 45 percent. Given the recent financial and natural environment that North Dakota farm managers have had to operate within (i.e., financial crisis and drought), farmers may not be able to further reduce family living expenses to compensate for lower income. Therefore, any reduction in income would more likely affect the farmer's ability to service debt obligations and finance capital replacements. This may lead to another round of financial stress not only for some farm operators but also for some agricultural creditors within the state.

Segments of the agricultural industry can expect another round of financial challenges in the year ahead as a result of lower net cash farm income. Agricultural suppliers may experience a decline in demand for their

products, reducing business activity. Secondary financial effects could be felt by rural businesses that service the agricultural sector. The result may be depressed regional economies, especially for those that depend on industries supporting and servicing production agriculture. The North Dakota economy would likely feel the effects given the state's continued reliance on production agriculture.

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APPENDIX A

The following informal tables are used to estimate changes in government payments, crop receipts, and fallow costs due to differences in farm program provisions, market prices, and production expenses from 1990 to 1991. Variations in gross income per historic base acre are due to changes in government payments, crop receipts, and economic fallow costs from 1990 to 1991. Changes can be attributed to differences in farm program provisions, market prices, and production expenses from 1990 to 1991. Sources of change in government payments are variations in farm program provisions--ACR requirements, paid acres, and deficiency payment rates. Sources of change in crop receipts are ACR requirements and market prices. Source of change in fallow costs are ACR requirements and production expenses.

Changes in government payments are caused by differences in ACR requirements, paid base acres, and deficiency payment rates. For example, the wheat ACR requirement changed from 5 percent in 1990 to 15 percent in 1991. As a result, the government payment per historic wheat base acre (paid acres * yield * deficiency payment rate) is projected to decline \$4.01 (\$34.11 - \$38.12). Changes in paid base acres (a net drop of 15 percent in 1991) are expected to decrease government payments per historic wheat base acre by \$6.02 (\$28.09 - \$34.11). A higher projected wheat deficiency payment rate in 1991 will increase government payments per historic base acre by \$4.92 (\$38.12 - \$33.20) but not enough to offset the other two considerations.

Changes in crop receipts are caused by differences in ACR requirements and market prices. For example, changes in the wheat ACR requirement reduced the number of planted acres in 1991. As a result, crop receipts per historic wheat base acre (planted acres * yield * market price) are projected to decline \$7.38 (\$62.65 - \$70.03). A projected higher wheat market price in 1991 will increase crop receipts per historic base acre by \$2.60 (\$70.03 - \$67.43). The lower crop receipts from changes in ACR requirements exceed the projected increase in receipts due to a higher market price for wheat by \$4.78.

Changes in economic fallow costs are caused by differences in ACR requirements and production expenses. The 1991 wheat ACR requirement will increase the number of fallow acres compared to 1990. As a result, fallow costs per historic wheat base acre (fallow acres * fallow cost) are projected to increase \$4.40 (\$6.60 - \$2.20). In addition, a higher economic fallow cost for wheat in 1991 will increase fallow costs per historic base acre by \$0.45 (\$7.05 - \$6.60). More fallow acres coupled with a higher per acre fallow cost are projected to increase economic fallow costs per historic wheat base acre in 1991.

Information presented in these tables can be used to determine the change in gross income per historic base acre attributable to differences in farm programs, market prices, and inflation for each crop from 1990 to 1991. For example, 97 percent ($16.89 / (16.89 + 0.45) * 100$) of the decline in gross income per historic wheat base acre is due to changes in farm programs. The remaining 3 percent decline can be attributed to higher production expenses in 1991. Higher market prices mitigate a portion of the decline in gross income due to changes in farm programs and production expenses.

CHANGE IN GOVERNMENT PAYMENTS DUE TO:

	Wheat			Barley			Corn			Oat		
	1990	1991	Change	1990	1991	Change	1990	1991	Change	1990	1991	Change
ACR REQUIREMENTS												
Paid												
Acres	0.95	0.85		0.9	0.925		0.9	0.925		0.95	1.0	
Yield (Bu)	27.3	27.3		44.4	44.4		65.0	65.0		50.0	50.0	
Deficiency												
Payment (\$)	1.47	1.47		0.47	0.47		0.58	0.58		0.15	0.15	
Total (\$)	38.12	34.11	(4.01)	18.78	19.30	0.52	33.93	34.87	0.94	7.13	7.50	0.37

PAID BASE ACRES

Paid												
Acres	0.85	0.7		0.925	0.775		0.925	0.775		1.0	0.85	
Yield (Bu)	27.3	27.3		44.4	44.4		65.0	65.0		50.0	50.0	
Deficiency												
Payment (\$)	1.47	1.47		0.47	0.47		0.58	0.58		0.15	0.15	
Total (\$)	34.11	28.09	(6.02)	19.30	16.17	(3.13)	34.87	29.21	(5.66)	7.50	6.38	(1.12)

DEFICIENCY PAYMENT RATES

Deficiency												
Payment(\$)	1.28	1.47		0.22	0.47		0.53	0.58		0.3	0.15	
Yield (Bu)	27.3	27.3		44.4	44.4		65.0	65.0		50.0	50.0	
Paid												
Acres	0.95	0.95		0.9	0.9		0.9	0.9		0.95	0.95	
Total(\$)	33.20	38.12	4.92	8.79	18.78	9.99	31.00	33.94	2.94	14.25	7.12	(7.12)

SUMMARY OF CHANGES IN GOVERNMENT PAYMENTS

	Wheat	Barley	Corn	Oat
	----- dollars -----			
ACR Requirements	(4.01)	0.52	0.94	0.37
Paid Base Acres	(6.02)	(3.13)	(5.66)	(1.12)
Deficiency Payment Rates	4.92	9.99	2.94	(7.12)
Total Change	(5.11)	7.38	(1.78)	(7.87)

CHANGE IN CROP RECEIPTS DUE TO:

	Wheat			Barley			Corn			Oat		
	1990	1991	Change	1990	1991	Change	1990	1991	Change	1990	1991	Change
ACR REQUIREMENTS												
Planted												
Acres	0.95	0.85		0.9	0.925		0.9	0.925		0.95	1.0	
Yield (bu)	27.3	27.3		44.4	44.4		65.0	65.0		50.0	50.0	
Price (\$)	2.70	2.70		1.74	1.74		2.00	2.00		1.05	1.05	
Total (\$)	70.03	62.65	(7.38)	69.53	71.46	1.93	117.00	120.25	3.25	49.87	52.50	2.62
MARKET PRICES												
Price (\$)	2.60	2.70		1.60	1.74		2.10	2.00		1.05	1.05	
Planted												
Acres	0.95	0.95		0.9	0.9		0.9	0.9		0.95	0.95	
Yield (bu)	27.3	27.3		44.4	44.4		65.0	65.0		50.0	50.0	
Total (\$)	67.43	70.03	2.60	63.94	69.53	5.59	122.85	117.00	(5.85)	49.88	49.88	0.00

SUMMARY OF CHANGES IN CROP RECEIPTS

	Wheat	Barley	Corn	Oat
	----- dollars -----			
ACR Requirements	(7.38)	1.93	3.25	2.62
Market Prices	2.60	5.59	(5.85)	0.00
Total Change	(4.78)	7.52	(2.60)	2.62

CHANGE IN ECONOMIC FALLOW COSTS DUE TO:

	Wheat			Barley			Corn			Oat		
	1990	1991	Change	1990	1991	Change	1990	1991	Change	1990	1991	Change
ACR REQUIREMENTS												
Fallow												
Acres	0.05	0.15		0.1	0.075		0.1	0.075		0.05	0.00	
Cost (\$)	44.00	44.00		44.00	44.00		44.00	44.00		44.00	44.00	
Total (\$)	2.20	6.60	4.40	4.40	3.30	(1.10)	4.40	3.30	(1.10)	2.20	0.00	(2.20)
PRODUCTION EXPENSES												
Cost (\$)	44.00	47.00		44.00	47.00		44.00	47.00		44.00	47.00	
Fallow												
Acres	0.15	0.15		0.075	0.075		0.075	0.075		0.00	0.00	
Total (\$)	6.60	7.05	0.45	3.30	3.53	0.23	3.30	3.53	0.23	0.00	0.00	0.00

SUMMARY OF CHANGES IN ECONOMIC FALLOW COSTS

	Wheat	Barley	Corn	Oat
	----- dollars -----			
ACR Requirements	4.40	(1.10)	(1.10)	(2.20)
Production Expenses	0.45	0.23	0.23	0.00
Total Change	4.85	(0.87)	(0.87)	(2.20)

SOURCES OF CHANGE IN GROSS INCOME PER HISTORIC BASE ACRE

	Wheat	Barley	Corn	Oat
	----- dollars -----			
Farm Program				
Paid Acres	(6.02)	(3.13)	(5.66)	(1.12)
Deficiency Payment Rates	4.92	9.99	2.94	(7.12)
ACR Requirements				
Government Payment	(4.01)	0.52	0.94	0.37
Crop Receipts	(7.38)	1.93	3.25	2.62
Fallow Costs	(4.40)	1.10	1.10	2.20
Total	<u>(16.89)</u>	<u>10.41</u>	<u>2.57</u>	<u>(3.05)</u>
Market Prices	2.60	5.59	(5.85)	0.00
Production Expenses	(0.45)	(0.23)	(0.23)	(0.00)
TOTAL CHANGE	<u>(14.74)</u>	<u>15.77</u>	<u>(3.51)</u>	<u>(3.05)</u>

APPENDIX B

The following informal tables are used to estimate changes in returns to unpaid labor, management, and risk per historic base acre. The change can be attributed to changes in government payments, crop receipts, economic fallow costs, and economic production costs due to differences in farm program provisions, market prices, and production expenses from 1990 to 1991. Sources of change in government payments are variations in wheat farm program provisions--ACR requirements, paid base acres, and deficiency payment rates. Sources of change in crop receipts are ACR requirements, market prices, and flex acres. Sources of change in economic fallow costs are ACR requirements and production expenses. Sources of change in wheat economic production costs are ACR requirements, production expenses, and flex acres.

Changes in government payments are caused by differences in ACR requirements, paid base acres, and deficiency payment rates. The wheat ACR requirement changed from 5 percent in 1990 to 15 percent in 1991. As a result, the government payment per historic wheat base acre (paid acres * yield * deficiency payment rate) is projected to decline \$4.01 (\$34.11 - \$38.12). Changes in paid base acres (a net drop of 15 percent in 1991 due to flex acres) is expected to decrease government payments per historic wheat base acre by \$6.02 (\$28.09 - \$34.11). A higher projected wheat deficiency payment rate in 1991 will increase government payments per historic base acre by \$4.92 (\$38.12 - \$33.20) but not enough to offset the other two considerations.

Changes in crop receipts are caused by differences in ACR requirements, market prices, and flex acres. Changes in the wheat ACR requirement reduced the number of planted acres in 1991. As a result, crop receipts per historic wheat base acre (planted acres * yield * market price) are projected to decline \$7.38 (\$62.65 - \$70.03). A projected higher wheat market price in 1991 will increase crop receipts per historic base acre by \$2.60 (\$70.03 - \$67.43). Introduction of flex acres allows up to 15 percent (assuming normal flex acres) of the farmer's historic wheat base acres to be planted to an alternative crop. Exercising this alternative will reduce income by \$11.05 per historic wheat base acre from crop receipts, but planting normal flex acres to sunflower allows the farmer to recoup \$15.27 in crop receipts. Therefore, the farmer receives \$4.22 more income per historic wheat base from crop receipts by planting sunflower rather than wheat on normal flex acres.

Changes in economic fallow costs are caused by differences in ACR requirements and production expenses. The 1991 wheat ACR requirement will increase the number of fallow acres compared to 1990. As a result, fallow costs per historic wheat base acre (fallow acres * fallow cost) are projected to increase \$4.40 (\$6.60 - \$2.20). In addition, a higher economic fallow cost for wheat in 1991 due to higher production expenses will increase fallow costs per historic base acre by \$0.45 (\$7.05 - \$6.60). More fallow acres coupled with a higher per acre fallow cost are projected to increase economic fallow costs per historic wheat base acre in 1991.

Changes in economic production costs are caused by differences in ACR requirements, production expenses, and flex acres. The 1991 wheat ACR requirement will decrease the number of planted acres compared to 1990. As a result, economic production costs per historic wheat base acre (planted acres * economic production cost) are projected to decrease \$9.66 (\$82.08 - \$91.74). A higher economic production cost for wheat in 1991 due to higher production

expenses will increase costs per historic base acre by \$1.60 (\$83.68 - \$82.08). Introduction of flex acres decreases production costs attributable to wheat (\$14.77 per historic wheat base acre because of less planted wheat acres) but increases overall production costs \$2.28 (\$17.05 - \$14.77) per historic wheat base acre because sunflower is planted on normal flex acres instead of wheat.

Information presented in these tables can be used to determine the change in returns to unpaid labor, management, and risk per wheat historic base acre attributable to differences in farm programs, market prices, and production expenses from 1990 to 1991. For example, 72 percent ($5.29 / (5.29 + 2.05) * 100$) of the decline in returns to unpaid labor, management, and risk per historic wheat base acre is due to changes in farm programs. The remaining 28 percent decline can be attributed to higher production expenses. Higher projected wheat market prices mitigate a portion of the decline in returns to unpaid labor, management, and risk due to changes in farm programs and production expenses.

CHANGE IN GOVERNMENT PAYMENTS DUE TO:

	Wheat		
	1990	1991	Change
ACR REQUIREMENTS			
Paid Acres	0.95	0.85	
Yield (Bu)	27.3	27.3	
Deficiency Payment (\$)	1.47	1.47	
Total (\$)	38.12	34.11	(4.01)
PAID BASE ACRES			
Paid Acre	0.85	0.70	
Yield (Bu)	27.3	27.3	
Deficiency Payment (\$)	1.47	1.47	
Total (\$)	34.11	28.09	(6.02)
DEFICIENCY PAYMENT RATES			
Deficiency Payment (\$)	1.28	1.47	
Yield (Bu)	27.3	27.3	
Paid Acres	0.95	0.95	
Total (\$)	33.20	38.12	4.92

CHANGE IN CROP RECEIPTS DUE TO:

Wheat

	1990	1991	Change
ACR REQUIREMENTS			
Planted Acres	0.95	0.85	
Yield (Bu)	27.3	27.3	
Price (\$)	2.70	2.70	
Total (\$)	70.02	62.66	(7.38)

MARKET PRICES

Price (\$)	2.60	2.70	
Planted Acres	0.95	0.95	
Yield (Bu)	27.3	27.3	
Total (\$)	67.43	70.03	2.60

FLEX PLANTED ACRES--WHEAT

Planted Acres	0.95	0.8	
Price (\$)	2.70	2.70	
Yield (Bu)	27.3	27.3	
Total (\$)	70.02	58.97	(11.05)

FLEX PLANTED ACRES--SUNFLOWER

Price (\$)		0.087	
Yield (lbs)	1,170		
Planted Acres		0.15	
Total(\$)		15.27	15.27

CHANGE IN ECONOMIC FALLOW COSTS DUE TO:

	Wheat		
	1990	1991	Change
ACR REQUIREMENT			
Fallow Acres	0.05	0.15	
Cost (\$)	44.00	44.00	
Total (\$)	2.20	6.60	4.40

PRODUCTION EXPENSES

Cost (\$)	44.00	47.00	
Fallow Acres	0.15	0.15	
Total (\$)	6.60	7.05	0.45

CHANGE IN ECONOMIC PRODUCTION COSTS DUE TO:

ACR REQUIREMENTS

Planted Acres	0.95	0.85	
Cost (\$)	96.57	96.57	
Total (\$)	91.74	82.08	(9.66)

PRODUCTION EXPENSES

Cost (\$)	96.57	98.44	
Planted Acres	0.85	0.85	
Total (\$)	82.08	83.68	1.60

FLEX PLANTED ACRES--WHEAT

Planted Acres	0.95	0.80	
Cost (\$)	98.44	98.44	
Total (\$)	93.52	78.75	(14.77)

FLEX PLANTED ACRES--SUNFLOWER

Cost (\$)	113.65		
Planted Acres	0.15		
Total (\$)	17.05	17.05	

SOURCES OF CHANGE IN RETURNS TO UNPAID LABOR, MANAGEMENT, AND RISK PER
HISTORIC BASE ACRE

	Wheat --- \$ ---
Farm Program	
Deficiency Payment Rates	4.92
Flex	
Paid Acres	(6.02)
Planted Acres--Wheat	(11.05)
Planted Acres--Sunflower	15.27
Wheat Production Costs	14.77
Sunflower Production Costs	(17.05)
ACR Requirements	
Government Payment	(4.01)
Crop Receipts	(7.38)
Economic Fallow Costs	(4.40)
Economic Production Costs	9.66
Total	<u>(5.29)</u>
Market Prices	2.60
Production Expenses	
Economic Fallow Costs	(0.45)
Economic Production Costs	(1.60)
Total	<u>(2.05)</u>
TOTAL	<u><u>(4.74)</u></u>

APPENDIX C

The following informal tables are used to estimate changes in net cash flow per historic base acre. The change can be attributed to changes in government payments, crop receipts, cash fallow costs, and cash production costs due to differences in farm program provisions, market prices, and production expenses from 1990 to 1991. Sources of change in government payments are variations in wheat farm program provisions--ACR requirements, paid base acres, and deficiency payment rates. Sources of change in crop receipts are ACR requirements, market prices, and flex acres. Sources of change in cash fallow costs are ACR requirements and production expenses. Sources of change in cash production costs are ACR requirements, production expenses, and flex acres.

Changes in government payments are caused by differences in ACR requirements, paid base acres, and deficiency payment rates. For example, the wheat ACR requirement changed from 5 percent in 1990 to 15 percent in 1991. As a result, the government payment per historic wheat base acre (paid acres * yield * deficiency payment rate) is projected to decline \$4.01 (\$34.11 - \$38.12). Changes in paid base acres (a net drop of 15 percent in 1991 due to flex acres) is expected to decrease government payments per historic wheat base acre by \$6.02 (\$28.09 - \$34.11). A higher projected wheat deficiency payment rate in 1991 will increase government payments per historic base acre by \$4.92 (\$38.12 - \$33.20).

Changes in crop receipts are caused by differences in ACR requirements, market prices, and flex acres. For example, changes in the wheat ACR requirement reduced the number of planted acres in 1991. As a result, crop receipts per historic wheat base acre (planted acres * yield * market price) are projected to decline \$7.38 (\$62.65 - \$70.03). A projected higher wheat market price in 1991 will increase crop receipts per historic base acre by \$2.60 (\$70.03 - \$67.43). Introduction of flex acres allows up to 15 percent (assuming normal flex acres) of the farmer's historic wheat base acres to be planted to an alternative crop. Exercising this alternative will reduce income by \$11.05 per historic wheat base acre from crop receipts due to diverted flex acres, but planting normal flex acres to sunflower allows the farmer to recoup \$15.27 in crop receipts.

Changes in cash fallow costs are caused by differences in ACR requirements and production expenses. The 1991 wheat ACR requirement will increase the number of fallow acres compared to 1990. As a result, fallow costs per historic wheat base acre (fallow acres * fallow cost) are projected to increase \$2.56 (\$3.84 - \$1.28). In addition, a higher cash fallow cost for wheat in 1991 will increase fallow costs per historic base acre by \$0.46 (\$4.30 - \$3.84). More fallow acres coupled with a higher per acre fallow cost are projected to increase cash fallow costs per historic wheat base acre in 1991.

Changes in cash production costs are caused by differences in ACR requirements, production expenses, and flex acres. For example, the 1991 wheat ACR requirement will decrease the number of planted acres compared to 1990. As a result, cash production costs per historic wheat base acre (planted acres * cash production cost) are projected to decrease \$4.11 (\$34.88 - \$38.99). A lower cash production cost for wheat in 1991 will decrease production costs per historic base acre by \$4.25 (\$30.63 - \$34.88). Diverted flex acres decrease production costs attributable to wheat (\$5.41 per historic

wheat base acre because of less planted wheat acres) but increases overall production costs \$3.18 (\$8.59 - \$5.41) per historic wheat base acre because sunflower is planted on normal flex acres instead of wheat.

Information presented in these tables can be used to determine the change in gross income per historic base acre attributable to differences in farm programs, market prices, and production expenses from 1990 to 1991. For example, all of the decline in net cash flow per historic wheat base acre is due to changes in farm programs. A higher projected wheat market price and lower overall production expenses for 1991 will mitigate a portion of the decline in net cash flow due to changes in farm programs.

CHANGE IN GOVERNMENT PAYMENTS DUE TO:

	Wheat			Barley			Corn			Oat		
	1990	1991	Change	1990	1991	Change	1990	1991	Change	1990	1991	Change
ACR REQUIREMENTS												
Paid Acres	0.95	0.85		0.9	0.925		0.9	0.925		0.95	1.0	
Yield (Bu)	27.3	27.3		44.4	44.4		65.0	65.0		50.0	50.0	
Deficiency												
Payment (\$)	1.47	1.47		0.47	0.47		0.58	0.58		0.15	0.15	
Total (\$)	38.12	34.11	(4.01)	18.78	19.30	0.52	33.93	34.87	0.94	7.12	7.50	0.37
PAID BASE ACRES												
Paid Acre	0.85	0.7		0.925	0.775		0.925	0.775		1.0	0.85	
Yield (Bu)	27.3	27.3		44.4	44.4		65.0	65.0		50.0	50.0	
Deficiency												
Payment (\$)	1.47	1.47		0.47	0.47		0.58	0.58		0.15	0.15	
Total (\$)	34.11	28.09	(6.02)	19.30	16.17	(3.13)	34.87	29.22	(5.65)	7.50	6.37	(1.12)
DEFICIENCY PAYMENT RATES												
Deficiency												
Payment (\$)	1.28	1.47		0.22	0.47		0.53	0.58		0.3	0.15	
Yield (Bu)	27.3	27.3		44.4	44.4		65.0	65.0		50.0	50.0	
Paid Acre	0.95	0.95		0.9	0.9		0.9	0.9		0.95	0.95	
Total (\$)	33.20	38.12	4.92	8.79	18.78	9.99	31.00	33.93	2.93	14.25	7.12	(7.12)

SUMMARY OF CHANGES IN GOVERNMENT PAYMENTS

	Wheat	Barley	Corn	Oat
	----- dollars -----			
ACR Requirements	(4.01)	0.52	0.94	0.37
Paid Base Acres	(6.02)	(3.13)	(5.65)	(1.12)
Deficiency Payment Rates	4.92	9.99	2.93	(7.12)
Total Change	(5.11)	7.38	(1.78)	(7.87)

CHANGE IN CROP RECEIPTS DUE TO:

	Wheat			Barley			Corn			Oat		
	1990	1991	Change	1990	1991	Change	1990	1991	Change	1990	1991	Change
ACR REQUIREMENTS												
Planted												
Acres	0.95	0.85		0.9	0.925		0.9	0.925		0.95	1.0	
Yield (Bu)	27.3	27.3		44.4	44.4		65.0	65.0		50.0	50.0	
Price (\$)	2.70	2.70		1.74	1.74		2.00	2.00		1.05	1.05	
Total (\$)	70.03	62.65	(7.38)	69.53	71.46	1.93	117.00	120.25	3.25	49.87	52.50	2.62

MARKET PRICES

Price (\$)	2.60	2.70		1.60	1.74		2.10	2.00		1.05	1.05	
Planted												
Acres	0.95	0.95		0.9	0.9		0.9	0.9		0.95	0.95	
Yield (Bu)	27.3	27.3		44.4	44.4		65.0	65.0		50.0	50.0	
Total (\$)	67.43	70.03	2.60	63.94	69.53	5.59	122.85	117.00	(5.85)	49.88	49.88	0.00

DIVERTED FLEX ACRES

Planted												
Acres	0.95	0.8		0.9	0.75		0.9	0.75		0.95	0.8	
Price (\$)	2.70	2.70		1.74	1.74		2.00	2.00		1.05	1.05	
Yield (Bu)	27.3	27.3		44.4	44.4		65.0	65.0		50.0	50.0	
Total (\$)	70.02	58.97	(11.05)	69.53	57.94	(11.59)	117.00	97.50	(19.50)	49.87	42.00	(7.87)

FLEX PLANTED ACRES--SUNFLOWER

Price (\$)		0.087			0.087			0.087			0.087	
Yield (lbs)		1,170			1,170			1,170			1,170	
Planted Acres		0.15			0.15			0.15			0.15	
Total (\$)			15.27			15.27			15.27			15.27

SUMMARY OF CHANGES IN CROP RECEIPTS

	Wheat	Barley	Corn	Oat
	----- dollars -----			
ACR Requirements	(7.38)	1.93	3.25	2.62
Market Price	2.60	5.59	(5.85)	0.00
Diverted Flex Acres	(11.05)	(11.59)	(19.50)	(7.87)
Flex Planted Acres--Sunflower	15.27	15.27	15.27	15.27
Total Change	(0.56)	11.20	(6.83)	10.02

CHANGE IN CASH FALLOW COSTS DUE TO:

	Wheat			Barley			Corn			Oat		
	1990	1991	Change	1990	1991	Change	1990	1991	Change	1990	1991	Change
ACR REQUIREMENTS												
Fallow												
Acres	0.05	0.15		0.1	0.075		0.1	0.075		0.05	0.000	
Cost (\$)	25.65	25.65		25.65	25.65		25.65	25.65		25.65	25.65	
Total (\$)	1.28	3.84	2.56	2.56	1.92	(0.64)	2.56	1.92	(0.64)	1.28	0.000	(1.28)
PRODUCTION EXPENSES												
Cost (\$)	25.65	28.67		25.65	28.67		25.65	28.67		25.65	28.67	
Fallow												
Acres	0.15	0.15		0.075	0.075		0.075	0.075		0.00	0.00	
Total (\$)	3.84	4.30	0.46	1.92	2.15	0.23	1.92	2.15	0.23	0.00	0.00	0.00

CHANGE IN CASH PRODUCTION COSTS DUE TO:

ACR REQUIREMENTS												
Planted												
Acres	0.95	0.85		0.9	0.925		0.9	0.925		0.95	1.0	
Cost (\$)	41.04	41.04		44.32	44.32		72.92	72.92		35.27	35.27	
Total (\$)	38.99	34.88	(4.11)	39.89	41.00	1.11	65.63	67.45	1.82	33.51	35.27	1.76
PRODUCTION EXPENSES												
Cost (\$)	41.04	36.04		44.32	39.62		72.92	91.92		35.27	34.79	
Planted												
Acres	0.85	0.85		0.925	0.925		0.925	0.925		1.0	1.0	
Total (\$)	34.88	30.63	(4.25)	41.00	36.65	(4.35)	67.45	85.03	17.58	35.27	34.79	(0.48)
DIVERTED FLEX ACRES												
Planted												
Acres	0.95	0.8		0.9	0.75		0.9	0.75		0.95	0.8	
Cost (\$)	36.04	36.04		39.62	39.62		91.92	91.92		34.79	34.79	
Total (\$)	34.24	28.83	(5.41)	35.66	29.71	(5.95)	82.73	68.94	(13.79)	33.05	27.83	(5.22)
FLEX PLANTED ACRES--SUNFLOWER												
Cost (\$)		57.24			57.24			57.24			57.24	
Acres												
Planted		0.15			0.15			0.15			0.15	
Total (\$)			8.59			8.59			8.59			8.59

SUMMARY OF CHANGES IN CASH FALLOW AND CASH PRODUCTION COSTS

	Wheat	Barley	Corn	Oat
	----- dollars -----			
CASH FALLOW COST				
ACR Requirements	2.56	(0.64)	(0.64)	(1.28)
Production Expenses	0.46	0.23	0.23	0.00
CASH PRODUCTION COSTS				
ACR Requirements	(4.11)	1.11	1.82	1.76
Production Expenses	(4.25)	(4.35)	17.58	(0.48)
Diverted Flex Acres	(5.41)	(5.95)	(13.79)	(5.22)
Flex Planted Acres--sunflower	8.59	8.59	8.59	8.59
Total Change	<u>(2.16)</u>	<u>(1.01)</u>	<u>14.20</u>	<u>4.65</u>

SOURCES OF CHANGE IN NET CASH FLOW PER HISTORIC BASE ACRE

	Wheat	Barley	Corn	Oat
	----- dollars -----			
Farm Program				
Deficiency Payment Rates	4.92	9.99	2.93	(7.12)
Flex				
Paid Acres	(6.02)	(3.13)	(5.65)	(1.12)
Diverted Acres	(11.05)	(11.59)	(19.50)	(7.87)
Planted Acres--Sunflower	15.27	15.27	15.27	15.27
Production Costs	5.41	5.95	13.79	5.22
Sunflower Production Costs	(8.59)	(8.59)	(8.59)	(8.59)
ACR Requirements				
Government Payment	(4.01)	0.52	0.94	0.37
Crop Receipts	(7.38)	1.93	3.25	2.62
Cash Fallow Costs	(2.56)	0.64	0.64	1.28
Cash Production Costs	4.11	(1.11)	(1.82)	(1.76)
Total	<u>(9.90)</u>	<u>9.88</u>	<u>1.26</u>	<u>(1.70)</u>
Market Prices	2.60	5.59	(5.85)	0.00
Production Expenses				
Cash Fallow Costs	(0.46)	(0.23)	(0.23)	(0.00)
Cash Production Costs	4.25	4.35	(17.58)	0.48
Total	<u>3.79</u>	<u>4.12</u>	<u>(17.81)</u>	<u>0.48</u>
TOTAL	<u>(3.51)</u>	<u>19.59</u>	<u>(22.40)</u>	<u>(1.22)</u>

