

A panel of four northwest Tennessee grain farmers, with support from County Extension Agents and the Area Farm Management Specialist, used a consensus-building method to define the financial and management characteristics of a typical large grain farm in northwest Tennessee. The resulting 2,480-acre representative grain farm (for which the characteristics are shown on the first page of this publication) was then used to conduct a financial analysis of the effects of market conditions in 1997, 1998, and 1999 on the farm's bottom line and financial strength.

Information provided by panelists was used to adjust county yields and state prices for 1997 and 1998 to represent yields and prices typical for a northwest Tennessee grain farm. Yield projections for 1999 were made by adjusting normal county yields for weather-related losses (October 1 TASS Crop Conditions). Crop price projections were provided on October 15 by Extension Specialists in agricultural economics at The University of Tennessee. The prices and yields assumed for this analysis are shown in table 1. Estimates of the farm's financial situation were made using 1997, 1998, and 1999 prices and yields while holding crop mixes and management practices for 1997 and 1999 consistent with 1998.

Table 1. Prices and Yields Assumed for the Analyses.

	Crop Yields			Crop Prices		
	1997	1998	1999	1997	1998	1999
Corn (bushels)	122	107	113	\$2.75	\$2.10	\$1.90
Wheat (bushels)	51	49	56	\$3.35	\$2.25	\$2.75
Soybeans (bushels)	41	36	16	\$6.50	\$5.50	\$4.95

The farm's income statement is shown in table 2. Total cash revenues reflect crop receipts and government payments. Total cash expenses include cash operating expenses, local and state taxes, and interest on debt. Total cash expenses subtracted from total cash revenues determines the total net cash farm income, which is carried over to the statement of cash flows (shown in table 3). Net cash farm income represents the amount of funds available for the pay-

Table 2. Income Statement for a 2,480-Acre Representative Grain Farm in Northwest TN.

	1997	1998	1999
<b>Cash Revenues</b>			
Soybeans	279,958	207,999	83,200
Com	352,443	236,047	225,542
Wheat	<u>89,739</u>	<u>57,909</u>	<u>80,889</u>
Total Crop Receipts	722,140	501,955	389,631
Loan Deficiency Payment	0	20,714	39,489
AMTA Contract Payment	44,003	54,147	34,860
Special Government Payment	0	27,074	34,860
Total Cash Revenues	766,143	603,890	498,840
<b>Cash Expenses</b>			
Cash Operating Expenses	489,430	487,064	494,352
Interest on Debt	<u>53,695</u>	<u>44,674</u>	<u>41,863</u>
Total Cash Expenses	543,125	531,738	536,215
Net Cash Farm Income	223,018	72,152	-37,375

ment of family living withdrawals, federal income and employment taxes, and principal on debt.

Crop receipts decreased 30 percent from 1997 to 1998 (table 2). With a special government payment (called a Market Loss Payment, which is approximately equal to 50 percent of the 1998 AMTA contract payment--providing an additional \$27.1 thousand to total cash revenues) a \$72.2 thousand net cash farm income results, 68 percent less than 1997. Without government payments, 1998 net cash farm income would have been negative \$28.6 thousand.

Total crop receipts in 1999 decrease \$112.3 thousand compared to 1998. This 22 percent decrease in crop receipts results from depressed soybean yields and depressed prices. Government payments, which include a special government payment that equals 100

Table 3. Statement of Cashflow for a 2,480-Acre Representative Grain Farm in Northwest TN.

	1997	1998	1999
Beginning Cash Reserves	0	121,881	91,401
Net Cash Farm Income	223,018	72,152	-37,375
Add: Interest on Cash Reserve	0	2,755	2,047
Less: Cash Loss on Machinery	0	362	0
Less: Family Withdrawals	45,000	45,000	45,000
Less: Federal Income Tax	-2,668	-2,493	-2,493
Less: Employment Tax	2,348	0	0
Cash Flow From Operations	178,338	153,919	13,566
Less: Land Prindpal	5,533	5,855	6,240
Less: Machinery Prindpal	50,924	56,663	63,502
Ending Cash Reserves	121,881	91,401	-56,176

percent of the 1999 AMTA contract payment, provide \$109.2 thousand to total cash revenues. Although sufficient to cover cash operating expenses, total cash revenues cover only \$4.5 thousand of the \$41.9 thousand interest charge. The result is a negative \$37.4 thousand net cash farm income.

Rather than being used to accelerate debt payment, ending cash balances are made available for use in subsequent years (shown in table 3). The 1997 ending cash balance of \$121.9 thousand was made available for use in 1998, resulting in a \$91.4 thousand ending cash balance. Despite inheriting the 1998 ending cash balance, the farm experienced a \$56.2 thousand cash deficit in 1999. Had a portion of the 1997 cash surplus been used to reduce principal on debt, the analysis would show reductions in interest expense and debt in 1998, however, the farm would have experienced a \$33.2 thousand cash deficit that year. This deficit would have carried over into 1999 in the form of an operating loan, resulting in a \$182.9 thousand cash deficit.

Overall, as illustrated in table 4, the farm remains very liquid and solvent. This is largely due to the relatively low debt load (17.5 percent) that is assumed in the analysis. From a creditor's perspective, this means that the farm has sufficient collateral for creditors to issue new loans or refinance debt. However, coverage ratios drop well below 1.10 in 1998 and especially 1999, meaning that farm income is insufficient in these years to cover scheduled principal payments. In such a case, the farm may be required to restructure debt before new loans can be secured. Reduced profitability becomes evident by the operating profit mar-

Table 4. Financial Ratios for a 2,480-Acre Representative Grain Farm in Northwest TN.

	1997	1998	1999
<b>Liquidity</b>			
Current Ratio	5.56	6.76	6.50
<b>Solvency</b>			
Debt/Asset Ratio	0.18	0.15	0.15
Debt/Equity Ratio	0.22	0.17	0.18
<b>Repayment Capacity</b>			
Coverage Ratio	2.13	0.69	-0.34
<b>Profitability</b>			
Operating Profit Margin	0.30	0.12	-0.08
Rate of Return on Assets	0.13	0.04	-0.02
Rate of Return on Equity	0.12	0.02	-0.06

gin as the profit generated from every dollar of revenue drops from 30 cents in 1997 to negative 8 cents in 1999. Despite depressed revenues in 1998, the rate of return on assets is still considered average. On the other hand, the rate of return on assets and equity are negative in 1999.

While cash revenues were not sufficient to cover all interest expenses in 1999, this farm should retain enough financial strength to secure additional credit if debt is restructured to improve cash flows. The federal government recently declared Tennessee a disaster area, allowing farmers to apply for low-interest emergency loans to finance a portion of their losses. While a 1999 special government payment is included in the analysis, additional disaster-relief payments approved by Congress are not. Implications of additional disaster payments and low-interest emergency loans on the representative farm's financial situation will be addressed in a future issue of TnFARMS.

Table 5. Interpretation of Financial Ratios.

		Vulnerable	Average	Strong
<b>Liquidity</b>	Ability to meet short-term financial obligations and continue normal operations.			
Current Ratio	The higher the ratio, the greater the ability to meet financial obligations.		1.00	2.00
<b>Solvency</b>	Ability to repay all financial obligations and overcome financial adversity.			
Debt/Asset Ratio	The higher the ratio, the more risk exposure of the farm business.		0.40	0.20
Debt/Equity Ratio	The higher the ratio, the more total capital supplied by creditors.		1.50	0.43
<b>Repayment Capacity</b>	Ability of farm to repay farm debt with farm income.			
Coverage Ratio	As the ratio increases over 1:1, the greater the margin to service debt.		1.10	1.35
<b>Profitability</b>	Measure of profit generated from land, labor, management, and capital.			
Operating Profit Margin	Profit (revenue less operating cash costs) per dollar of gross revenues.		0.20	0.35
Rate of Return on Assets	Profit generated per dollar of assets invested.		0.01	0.05
Rate of Return on Equity	Profit generated per dollar of equity.		0.05	0.10

**APAC would like to extend special thanks to the farmers and Extension personnel who devoted their time to the development of the representative Northwest Tennessee large grain farm:**

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The representative farm and associated financial information used in the TnFARMS project do not represent the farm of any one panelist. However, panelists regard the representative farm as a reasonable reflection of economic activity on actual farms with similar parameters in their region.

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