

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 moderate-size grain farm in northwest Tennessee. The resulting 1,182-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 the 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)	120	105	108	\$2.75	\$2.10	\$1.90
Wheat (bushels)	55	45	58	\$3.35	\$2.25	\$2.75
Soybeans (bushels)	43	35	16	\$6.50	\$5.50	\$4.95

The farm's income statement is shown in table 2. Total cash revenues reflect crop receipts, government payments, and other farm income, which includes custom operations and hunting leases. Total cash expenses include cash operating expenses and interest on debt. Total cash expenses subtracted from total cash revenues determines net cash farm income, which carries over to the statement of cash flows (shown in table 3). Net cash farm income represents the amount of funds available for the payment of

Table 2. Income Statement for a 1182-Acre Representative Grain Farm in Northwest TN.

	1997	1998	1999
<b>Cash Revenues</b>			
Soybeans	116,730	80,395	33,077
Corn	110,257	73,672	68,560
Wheat	30,780	16,914	26,645
Hay	14,850	14,892	0
Livestock	19,413	19,133	20,228
Total Crop Receipts	292,030	205,006	148,510
Loan Deficiency Payment	0	6,781	13,133
AMTA Contract Payment	9,157	11,184	7,199
Special Government Payment	0	5,592	7,199
Other Farm Income	7,000	7,000	7,000
Total Cash Revenues	308,187	235,563	183,041
<b>Cash Expenses</b>			
Cash Operating Expenses	210,531	210,541	212,722
Interest on Debt	29,460	26,881	29,511
Total Cash Expenses	239,991	237,422	242,233
Net Cash Farm Income	68,196	-1,859	-59,192

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

Crop receipts decrease 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 \$5.6 thousand to total cash revenues, a negative \$1.9 thousand net cash farm income results, 103 percent less than 1997. Without government payments, 1998 net cash farm income would have been negative \$25.4 thousand.

Table 3. Statement of Cashflow for an 1,182-Acre Representative Grain Farm in Northwest TN.

	1997	1998	1999
Beginning Cash Reserves	0	14,220	-41,983
Net Cash Farm Income	68,196	-1,859	-59,192
Add: Interest on Cash Reserve	0	161	0
Less: Cash Loss on Machinery	1,523	0	0
Less: Family Withdrawals	30,000	30,000	30,000
Less: Federal Income Tax	-3,392	-1,637	-2,395
Less: Employment Tax	1,732	0	0
Cash Flow From Operations	38,333	-15,841	-128,780
Less: Land Principal	3,239	3,427	3,653
Less: Machinery Principal	20,874	22,715	24,765
Ending Cash Reserves	14,220	-41,983	-157,198

Total crop receipts in 1999 decrease \$56.5 thousand compared to 1998. This 27 percent decrease in crop receipts results largely from depressed soybean yields and depressed prices. Even with a special government payment that equals 100 percent of the 1999 AMTA contract payment providing \$27.5 thousand, total cash revenues cover only two-thirds of cash operating expenses and none of the \$29.5 thousand interest charge. The result is a negative \$59.2 thousand net cash farm income.

The 1997 ending cash balance of \$14.2 thousand was made available for use in 1998 rather than being used to accelerate debt payment (shown in table 3). The resulting \$42.0 thousand cash deficit in 1998 is carried over into 1999 in the form of an operating loan and accounts for 27 percent of the \$157.2 thousand 1999 cash deficit. Had the 1997 cash surplus been used to reduce loan principals, the analysis would show reductions in interest expense and debt in 1998. However, the farm's cash deficit would have increased to \$56.4 thousand in 1998 if the 1997 cash surplus had not been available

Overall, as illustrated in table 4, liquidity and solvency indicate that the farm maintains sufficient collateral for creditors to issue new loans. However, the coverage ratios are negative in 1998 and 1999, meaning that farm income is insufficient in these years to cover scheduled principal payments. Before creditors would be willing to issue new loans, the farm would need to restructure debt to improve its cash flow situation. Depressed revenues in 1998 and 1999 led to negative rates of return on assets and equity and the

Table 4. Financial Ratios for a 1,182-Acre Representative Grain Farm in Northwest TN.

	1997	1998	1999
<b>Liquidity</b>			
Current Ratio	5.03	4.58	2.98
<b>Solvency</b>			
Debt/Asset Ratio	0.20	0.22	0.34
Debt/Equity Ratio	0.25	0.28	0.50
<b>Repayment Capacity</b>			
Coverage Ratio	1.33	-0.06	-0.99
<b>Profitability</b>			
Operating Profit Margin	0.22	-0.02	-0.33
Rate of Return on Assets	0.10	-0.01	-0.08
Rate of Return on Equity	0.07	-0.06	-0.18

profit generated from every dollar of revenue decreases 55 cents from 1997 to 1999.

If the farm restructures its debt to improve the farm's cash flow, it should be able to secure credit for next year's operating capital. However, as the farm continues to survive off of equity, the farm's liquidity and solvency will continue to erode, and eventually render it insolvent. Because the federal government recently declared Tennessee a disaster area, farmers can apply for low-interest emergency loans, allowing the farm 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 TN moderate-size 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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The University of Tennessee E11-1216-00-002-00

## We Welcome Your Input

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