

A panel of three southwest Tennessee cotton 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 cotton farm in southwest Tennessee. The resulting 4,000-acre representative cotton 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 southwest Tennessee cotton 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
Cotton (pounds)	750	550	467	\$0.68	\$0.65	\$0.52
Corn (bushels)	103	77	93	\$2.75	\$2.10	\$1.90
Wheat (bushels)	45	44	48	\$3.35	\$2.25	\$2.75
Soybeans (bushels)	32	28	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 the total net cash farm income, which is carried over to the statement of

Table 2. Income Statement for a 4,000-Acre Representative Cotton Farm in Southwest TN.

	1997	1998	1999
Cash Revenues			
Cotton	1,127,125	790,093	536,688
Soybeans	143,853	106,506	54,775
Corn	137,127	78,282	85,544
Wheat	40,541	27,027	36,036
Cottonseed*	<u>155,747</u>	<u>130,109</u>	<u>84,529</u>
Total Crop Receipts	1,604,393	1,132,017	797,572
Loan Deficiency Payment	0	93,702	222,099
AMTA Contract Payment	75,435	117,548	76,073
Special Government Payment	0	58,774	76,073
Other Farm Income	7,000	7,000	7,000
Total Cash Revenues	1,686,828	1,409,041	1,178,817
Cash Expenses			
Cash Operating Expenses	1,281,617	1,247,876	1,188,359
Interest on Debt	<u>182,329</u>	<u>169,791</u>	<u>173,012</u>
Total Cash Expenses	1,463,946	1,417,667	1,361,371
Net Cash Farm Income	222,882	-8,626	-182,554

* Cottonseed revenues shown to offset ginning charges.

cash flows (shown in table 3). Net cash farm income represents the amount of funds available for the payment of family living withdrawals, federal income and employment taxes, and principal on debt.

Despite the \$222.9 thousand net cash farm income generated in 1997, the farm is unable to cover scheduled principal payments, family withdrawals and taxes. The resulting \$22.7 thousand deficit is carried over to 1998 in the form of an operating loan. Compared with 1997, crop receipts decreased 29 percent in 1998 due to lower yields and market prices, but reduced crop receipts are partially offset by a \$135.8 thousand increase in Loan Deficiency

Table 3. Statement of Cashflow for a 4,000-Acre Representative Cotton Farm in Southwest TN.

	1997	1998	1999
Beginning Cash Reserves	0	-22,673	-276,159
Net Cash Farm Income	222,882	-8,626	-182,554
Add: Interest on Cash Reserve	0	0	0
Less: Cash Loss on Machinery	0	0	0
Less: Family Withdrawals	45,000	45,000	45,000
Less: Federal Income Tax	3,317	-6,994	-6,838
Less: Employment Tax	6,315	0	0
Cash Flow From Operations	168,250	-69,305	-496,875
Less: Land Principal	26,754	28,177	29,917
Less: Machinery Principal	164,169	178,677	194,794
Ending Cash Reserves	-22,673	-276,159	-721,586

Payments (LDP) and AMTA contract payments. Even 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 \$58.8 thousand to total cash revenues, a negative \$8.6 thousand net cash farm income results, leaving the farm unable to cover all interest expenses in 1998. Scheduled principal payments, family withdrawals, and the operating loan carry-over from 1997 increase the 1998 cash deficit to \$276.2 thousand.

Crop receipts decrease an additional 30 percent from 1998 to 1999, and despite \$374.2 thousand in government payments, which include a special government payment equal to 100 percent of the 1999 AMTA contract payment, a negative \$182.6 thousand net cash farm income results (20 times lower than 1998). Including scheduled principal payments, family withdrawals, and the operating loan carry-over from 1998, the farm is left with a \$721.6 thousand cash deficit in 1999.

From a creditor's perspective, strong liquidity and average solvency ratios indicate that the farm has sufficient collateral for the issuance of new loans or refinancing of debt, but low coverage ratios make apparent the associated risk. Low coverage ratios, which are largely due to the farm's relatively aggressive machinery replacement strategy, imply that farm income is insufficient to cover scheduled principal payments. The farm would likely need to restructure debt to improve its cash flow before new loans can be secured. Reduced profitability becomes evident by

Table 4. Financial Ratios for a 4,000-Acre Representative Cotton Farm in Southwest TN.

	1997	1998	1999
Liquidity			
Current Ratio	2.91	2.96	2.60
Solvency			
Debt/Asset Ratio	0.34	0.34	0.39
Debt/Equity Ratio	0.52	0.51	0.63
Repayment Capacity			
Coverage Ratio	0.96	0.33	-0.12
Profitability			
Operating Profit Margin	0.21	0.08	-0.05
Rate of Return on Assets	0.09	0.03	-0.01
Rate of Return on Equity	0.07	-0.02	-0.09

the operating profit margin as the profit generated from every dollar of revenue drops from 21 cents in 1997 to negative 5 cents in 1999. Although the rate of return on assets is strong in 1997, it is negative in 1999. The rate of return on equity, on the other hand, is average in 1997 and turns negative as soon as the next year.

If debt is restructured, the farm should be able to secure operating loans for next year, however, dependence on equity will continue to reduce the farm's liquidity and solvency. Since the federal government recently declared Tennessee a disaster area, farmers can 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
Liquidity	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
Solvency	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
Repayment Capacity	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
Profitability	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 Southwest Tennessee large cotton 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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We Welcome Your Input

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