A panel of five 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 moderate-size cotton farm in southwest Tennessee. The resulting 1,735-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)	715	524	426	$0.68	$0.65	$0.52
Corn (bushels)	115	68	90	$2.75	$2.10	$1.90
Soybeans (bushels)	33	28	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, 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 payment of family living withdrawals, federal income and employment taxes, and principal on debt.

Table 2. Income Statement for a 1,735-Acre Representative Cotton Farm in Southwest TN.

	1997	1998	1999
Cash Revenues			
Cotton	363,131	254,531	165,448
Soybeans	128,164	92,015	47,322
Corn	47,240	21,331	25,543
Cottonseed *	56,266	47,001	29,220
Total Crop Reciepts	594,801	414,878	267,533
Loan Deficiency Payment	0	30,436	72,511
AMTA Contract Payment	29,335	44,515	28,795
Special Government Payment	0	22,258	28,795
Total Cash Revenues	624,136	512,087	397,634
Cash Expenses			
Cash Operating Expenses	480047	466881	449,578
Interest on Debt	51,845	49,489	51,888
Total Cash Expenses	531,892	516,370	501,466
Net Cash Farm Income	92,244	-4,283	-103,832

* Cottonseed revenues used to off-set ginning charges.

Total crop reciepts in 1998 decrease $179.9 thousand compared to 1997 (table 2). Although Loan Deficiency Payments (LDP), AMTA contract payments and a special government payment (called a Market Loss Payment, which is approximately equal to 50 percent of the 1998 AMTA contract payment) provide $97.2 thousand to total cash revenues, the farm is unable to cover all cash operating and interest expenses in 1998, and a negative $4.3 thousand net cash farm income results.

Total crop reciepts for 1999 decrease $147.3 thousand compared to 1998. This 36 percent

Table 3. Statement of Cashflow for a 1,735-Acre Representative Cotton Farm in Southwest TN.

	1997	1998	1999
Beginning Cash Reserves	0	11,630	-53,743
Net Cash Farm Income	92,244	-4,283	-103,832
Add: Interest on Cash Reserve	0	264	0
Less: Cash Loss on Machinery	0	0	0
Less: Family Withdrawals	35,000	35,000	35,000
Less: Federal Income Tax	9,518	-1,532	-6,838
Less: Employment Tax	10,228	0	0
Cash Flow From Operations	37,498	-25,857	-185,737
Less: Land Principal	7,260	7,670	8,165
Less: Machinery Principal	18,608	20,216	22,052
Ending Cash Reserves	11,630	-53,743	-215,954

decrease in cash reciepts results from depressed yields and prices. Even with $130.1 thousand in government payments, which include a special government payment that equals 100 percent of the 1999 AMTA contract payment, total cash revenues cover only 88 percent of cash operating expenses and none of the $51.9 thousand interest charge. A negative $103.8 thousand net cash farm income results in 1999.

Despite the $11.6 thousand ending cash balance carried over from 1997, the farm is unable to cover scheduled principal payments, taxes, and family withdrawals in 1998. The resulting $53.7 thousand deficit is carried over to 1999 in the form of an operating loan. After covering scheduled principal payments, family withdrawals, and the operating loan carry-over from 1998, the farm is left with a $216.0 thousand cash deficit in 1999. Had a portion of 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 would have experienced a $65.6 thousand cash deficit that year.

From a creditor's perspective, the financial strength of this farm is declining, and surviving off of equity (covering cash deficits by carrying over operating loans to the following year) rapidly reduced the liquidity and solvency of the farm. Low coverage ratios, like those observed in 1998 and 1999, imply that farm income is insufficient to cover scheduled principal payments. Creditors understand and tolerate temporary losses of ability to repay finacial obilgations, but it is likely that this farm would need to restructure debt to improve its cash flow situation before creditors will issue new loans. Reduced profitability becomes evident by the operating profit margin as the profit generated from every dollar of revenue drops from 17 cents in 1997 to negative 22 cents in 1999. In addition, rates of return on assets and equity turn negative.

Table 4. Financial Ratios for a 1,735-Acre Representative Cotton Farm in Southwest TN.

	1997	1998	1999
Liquidity			
Current Ratio	2.80	2.66	1.96
Solvency			
Debt/Asset Ratio	0.36	0.38	0.51
Debt/Equity Ratio	0.56	0.60	1.04
Repayment Capacity			
Coverage Ratio	1.28	0.15	-0.98
Profitability			
Operating Profit Margin	0.17	0.02	-0.22
Rate of Return on Assets	0.12	0.01	-0.09
Rate of Return on Equity	0.10	-0.07	-0.30

Once debt is restructured to improve cash flows, the farm should be able to secure operatings loans for next year, however, further reductions in liquidity and solvency may render the farm insolvent. 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 TN moderate-size cotton farm:

Panel Participants:

Harris A. Armour, III
Tom Karcher
Eugene McFerren
Mark McNabb
LeeAnn Rhea

Facilitators:

Jimmy Castellaw, Area Management Specialist
Jamie Jenkins, Fayette Co. Extension Leader

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.

We Welcome Your Input

Contact TnFARMS
Project Leader:
Steve Slinsky
310 Morgan Hall
Department of
Agricultural Economics
and Rural Sociology
University of Tennessee
Knoxville, TN 37996
sslinsky@utk.edu
(423) 974-3667

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