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Agricultural & Food Policy Center
at Texas A&M University

ECONOMIC OUTLOOK FOR TEXAS REPRESENTATIVE COTTON FARMS GIVEN THE AUGUST 2003 FAPRI/AFPC BASELINE



AFPC Working Paper 03-5
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A policy working paper is designed to provide economic research on a timely basis. It is an interim product of a larger AFPC research project which will eventually be published as a policy research report. These results are published at this time because they are believed to contain relevant information to the resolution of current policy issues. AFPC welcomes comments and discussions of these results and their implications. Address such comments to the author(s) at:

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**ECONOMIC OUTLOOK FOR TEXAS
REPRESENTATIVE COTTON FARMS UNDER
THE AUGUST 2003 FAPRI/AFPC BASELINE**

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Executive Summary

The Agricultural and Food Policy Center (AFPC) at Texas A&M University develops and maintains data to simulate 10 representative cotton operations in major production areas in Texas. The chief purpose of this analysis is to determine those farms' economic viability for 2003 through 2007. The data necessary to simulate the economic activity of these operations is developed through ongoing cooperation with panels of agricultural producers in Texas. The Food and Agricultural Policy Research Institute (FAPRI) provided projected prices, policy variables, and input inflation rates in their August 2003 Baseline.

- Cotton prices are projected to increase to \$0.53/lb in 2004 before declining and holding in the \$0.51 to \$0.52/lb range from 2005 to 2007.
- None of the farms are considered to be in poor overall condition during the period; however, two farms (TXCB5500 and TXVC4500) are classified in extremely vulnerable condition with respect to their liquidity position. These two farms end the projected period at greater than a 50 percent probability of having a cash flow deficit.
- Eight of the ten farms are classified as marginal. These farms are marginal due to their high probabilities of having cash flow deficits by 2007.
- The two remaining farms (TXSP2239 and TXBC1400) are classified in good financial condition due to probabilities of cash flow deficits being less than 25 percent and low (less than 25 percent) probabilities of losing real net worth.

Economic Viability of Texas Representative Cotton Farms

August 2003 Baseline

Farm Name	P(Cash Flow Deficit) 2003-2007	P(Real Net Worth Declines) 2003-2007
TXSP2239	3-11	1-1
TXSP3745	43-39	1-2
TXPC2500	25-33	1-1
TXEC5000	31-32	1-4
TXRP2500	25-41	1-8
TXBC1400	17-21	1-2
TXMC3500	34-43	1-11
TXCB1850	39-43	1-11
TXCB5500	40-51	1-22
TXVC4500	39-54	1-5



Economic Outlook for Texas Representative Cotton Farms Under the August 2003 FAPRI/AFPC Baseline

The farm level economic impacts of the Farm Security and Rural Investment Act of 2002 on representative Texas cotton operations are projected in this report. The analysis was conducted over the 2001-2007 planning horizon using FLIPSIM, AFPC's whole farm simulation model. Data to simulate farming operations in Texas' major cotton production regions came from two sources:

- Producer panel cooperation to develop economic information to describe and simulate representative cotton farms.
- Projected prices, policy variables, and input inflation rates from the Food and Agricultural Policy Research Institute (FAPRI) August 2003 Baseline.

The primary objective of the analysis is to determine the farms' economic viability by region through the life of the 2002 Farm Bill.

The FLIPSIM policy simulation model incorporates the historical risk faced by cotton farmers for both prices and production. This report presents the results of the August 2003 Baseline in a risk context using selected simulated probabilities and ranges for annual net cash farm income values. The probability of a farm experiencing annual cash flow deficits and the probability of a farm losing real net worth are included as indicators of the cash flow and equity risks facing farms through the year 2007.

This report is organized into six sections. The first section summarizes the process used to develop the representative farms and the key assumptions utilized for the farm level analysis. The second section summarizes the FAPRI August 2003 Baseline and the policy and price assumptions used for the representative farm analyses. The third section presents the results of the simulation analyses for cotton farms. Section four summarizes the results for the cotton farms, and two appendices constitute the final sections of the report. Appendix A provides tables to summarize the physical and financial characteristics for each of the representative farms. Appendix B provides the names of producers, land grant faculty, and industry leaders who cooperated in the panel interview process to develop the representative cotton farms.

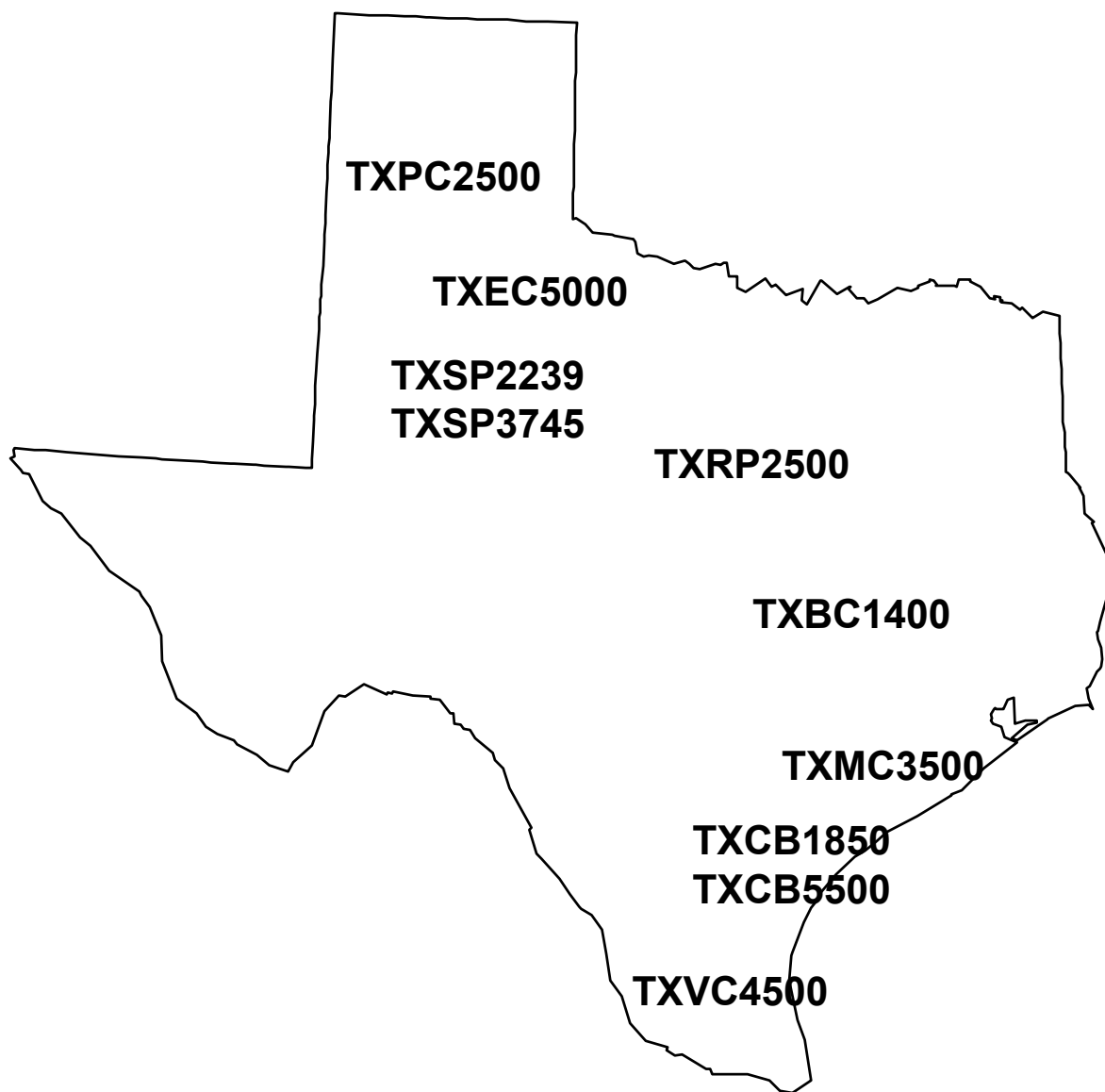
Panel Process

AFPC has developed and maintains data to simulate 10 representative cotton farms chosen from major cotton production areas across Texas (Figure 1). Characteristics for each of the farms in terms of location, size, crop mix, assets, and average receipts are summarized in Appendix A. Information necessary to simulate the economic activity on these representative farms is developed from panels of producers using a consensus-building interview process. Farm locations were chosen to represent the major cotton growing regions of Texas.

The data collected from the panel farms are analyzed in the whole farm simulation model (FLIPSIM) developed by AFPC. The producer panels are provided pro-forma financial statements for their representative farm and are asked to verify the accuracy of simulated results for the past year and the reasonableness of a five-year projection. Each panel must approve the model's ability to reasonably reflect the economic activity on their representative farm prior to using the farm for policy analyses.

Most farms used in the analysis have been updated with the panels since March 2002. All of the crop farms are assumed to begin 2001 with 20 percent intermediate- and long-term debt, based on information provided by ERS-USDA and the panel members. The debt levels the farms have at the outset of 2001 are based on a stratified tabulation of USDA's Farm Cost and Returns Survey for 2000, using the survey data for moderate to large size farms in states where AFPC has representative farms. Actual yields and prices were obtained for each of the farms for 2001 and 2002.

FIGURE 1. LOCATION OF TEXAS REPRESENTATIVE COTTON FARMS



Key Assumptions

- The farms were structured so government payment limits were not effective at reducing direct, counter-cyclical, and loan deficiency payments.
- Minimum family living withdrawals were assumed to be the higher of 10 percent of gross receipts or \$20,000 annually. Actual family living withdrawals are determined by historical consumption patterns. Therefore, as the farm's profitability increases so does the level of family living withdrawals.
- The farm is subject to owner/operator federal (income and self-employment) taxes as a sole proprietor, based on the current income tax provisions.
- No off-farm-related income, including family employment, was included in the analyses. Therefore, the farm reflects only the ability of the farm to provide for family living and capital replacement.
- Farm program parameters, average annual prices, crop yield trends, interest rates, and input cost inflation (deflation) are based on the August 2003 FAPRI Baseline which assumes continuation of the 2002 Farm Bill through 2007.
- Direct payments are made based on 85 percent of their historical base acreage times farm program yield times a direct payment rate. The direct payment rate is included in the August 2003 FAPRI Baseline.
- Marketing loan provisions were authorized in the 2002 Farm Bill and are assumed to be in place for the farm level analysis.
- Counter-cyclical payments are triggered by marketing year prices included in the August 2003 FAPRI Baseline.
- The farm level simulation model incorporates price and yield risk faced by farmers. Historical yield variability for crops over the past ten years are assumed to prevail for the planning horizon. Random crop prices are simulated using the 2003 August Baseline by FAPRI as the forecast of average prices. Prices reflect national price volatility caused by international production and demand as well as U.S. production risk.
- Historical crop yields (2001 and 2002) were based on actual values obtained from the producers. Crop yields for 2003-2007 were simulated stochastically based on the average yields provided by the producers and the historical yield variability for the farm. Producer-provided prices were used for 2001 and 2002. FAPRI's August Baseline prices were localized for the farms and used as the average prices for 2003-2007 to simulate stochastic crop prices.
- Market loss assistance payments and disaster provisions passed in 2001 have been incorporated into the analysis in 2001.
- Cotton farms are assumed to carry Multi-Peril Crop Insurance (MPCI) at the 65/100 level.

New and Updated Farms Since the February 2003 Baseline Update

Since publication of the last AFPC Representative Farms Baseline Update, five Texas representative cotton farms have been added:

TXCB5500	A large-sized cotton and sorghum farm located on the Texas Coastal Bend in Nueces County.
TXEC5000	A large-sized cotton farm located on the Eastern Caprock of the Texas South Plains (Crosby County).
TXMC3500	A large-sized cotton farm located on the middle Gulf Coast of Texas (Jackson County).
TXPC2500	A large-sized cotton farm located in the Texas Panhandle (Deaf Smith County).
TXVC4500	A large-sized cotton farm located in the lower Rio Grande Valley of Texas (Willacy County).
TXRP2500	Updated variable costs and reduced labor expense.

AFPC Color Classification Scheme

AFPC assigns overall financial ratings that encompass projected cash flow and equity change. Green farms are in good financial condition, yellow farms are moderate, and red farms are poor.

FAPRI August 2003 Baseline

Projected crop prices for FAPRI's August 2003 Baseline are summarized in Table 1. Cotton prices continue to increase gradually to \$0.52/lb. in 2007. Corn prices start at a high of \$2.30/bu. in 2002, but are projected to decrease in 2003 to \$2.05 and then increase marginally until they reach \$2.23/bu. by 2007. Wheat prices are expected to increase from 2004 through 2007 when wheat prices are projected to reach \$3.25/bu. Rice prices are expected to increase to \$6.50 in 2003 before retreating to the \$5.00 to \$5.50 range for 2004 through 2007.

Assumed loan rates and direct payment rates are summarized in Table 1. The annual direct payment rates for 2002-2007 reflect the increase in these payment rates authorized in the 2002 farm bill.

Projected annual rates of change for variable cash expenses are summarized in Table 3. The rate of change in input prices and interest rates come from FAPRI's August 2003 Baseline which relies on Global Insight (formerly DRI) macroeconomic projections. Annual interest rates paid for long- and intermediate-term loans and earned for savings are also summarized in Table 3. Assumed annual rates of change in land values over the 2002-2007 period are provided by the FAPRI Baseline and indicate roughly a 2 to 4% per year increase in nominal land values throughout the 2004-2007 period (Table 3).

Table 1. FAPRI August 2003 Baseline Projections of Crop Prices, Loan Rates, and AMTA Payment Rates, 2001-2007

	2001	2002	2003	2004	2005	2006	2007
Crop Prices							
Corn (\$/bu.)	1.97	2.30	2.05	2.10	2.15	2.20	2.23
Wheat (\$/bu.)	2.78	3.56	3.15	3.05	3.15	3.20	3.25
Cotton (\$/lb.)	0.2980	0.4300	0.5000	0.5300	0.5200	0.5100	0.5200
Sorghum (\$/bu.)	1.94	2.35	1.95	2.00	2.05	2.10	2.13
Soybeans (\$/bu.)	4.38	5.50	4.95	4.85	4.95	5.00	5.05
Barley (\$/bu.)	2.22	2.72	2.35	2.35	2.39	2.42	2.44
Oats (\$/bu.)	1.59	1.81	1.50	1.50	1.51	1.52	1.53
Rice (\$/cwt.)	4.25	4.18	6.50	5.50	5.00	5.00	5.20
Soybean Meal (\$/ton)	160.00	166.93	153.00	148.00	152.00	154.00	156.00
All Hay (\$/ton)	96.50	94.53	86.00	85.00	84.00	85.00	85.50
Peanuts (\$/ton)	468.00	364.00	400.00	390.00	392.00	394.00	396.00
Loan Rates							
Corn (\$/bu.)	1.89	1.98	1.98	1.95	1.95	1.95	1.95
Wheat (\$/bu.)	2.58	2.80	2.80	2.75	2.75	2.75	2.75
Cotton (\$/lb.)	0.5192	0.5200	0.5200	0.5200	0.5200	0.5200	0.5200
Sorghum (\$/bu.)	1.71	1.98	1.98	1.95	1.95	1.95	1.95
Soybeans (\$/bu.)	5.26	5.00	5.00	5.00	5.00	5.00	5.00
Barley (\$/bu.)	1.65	1.88	1.88	1.85	1.85	1.85	1.85
Oats (\$/bu.)	1.21	1.35	1.35	1.33	1.33	1.33	1.33
Rice (\$/cwt.)	6.50	6.50	6.50	6.50	6.50	6.50	6.50
Peanuts (\$/ton)	610.00	355.00	355.00	355.00	355.00	355.00	355.00
Direct Payment Rates							
Corn (\$/bu.)	0.5670	0.2800	0.2800	0.2800	0.2800	0.2800	0.2800
Wheat (\$/bu.)	0.9952	0.5200	0.5200	0.5200	0.5200	0.5200	0.5200
Cotton (\$/lb.)	0.1209	0.0667	0.0667	0.0667	0.0667	0.0667	0.0667
Sorghum (\$/bu.)	0.6795	0.3500	0.3500	0.3500	0.3500	0.3500	0.3500
Soybeans (\$/bu.)	0.1195	0.4400	0.4400	0.4400	0.4400	0.4400	0.4400
Barley (\$/bu.)	0.4268	0.2400	0.2400	0.2400	0.2400	0.2400	0.2400
Oats (\$/bu.)	0.0453	0.0240	0.0240	0.0240	0.0240	0.0240	0.0240
Rice (\$/cwt.)	4.4323	2.3500	2.3500	2.3500	2.3500	2.3500	2.3500
Peanuts (\$/ton)	0.0000	36.0000	36.0000	36.0000	36.0000	36.0000	36.0000

Source: Food and Agricultural Policy Research Institute (FAPRI) at the University of Missouri-Columbia and Iowa State University.

Table 2. FAPRI August 2003 Baseline Assumed Rates of Change in Input Prices, Annual Interest Rates, and Annual Changes in Land Values, 2002-2007

	2002	2003	2004	2005	2006	2007
Annual Rate of Change for Input Prices Paid						
Seed Prices (%)	2.20	1.68	1.62	1.30	1.19	1.09
Fertilizer Prices (%)	-17.25	-2.61	2.86	0.07	1.59	1.13
Chemical Prices (%)	-0.64	2.98	2.64	1.64	1.29	1.10
Machinery Prices (%)	-1.01	1.33	2.26	1.95	1.55	1.08
Fuel and Lube Prices (%)	-7.27	4.77	-2.88	0.14	2.26	1.71
Labor (%)	4.18	3.72	4.52	4.38	3.45	3.07
Other Input Prices (%)	-1.30	1.60	1.50	1.40	1.20	1.10
Non-Feed Dairy Costs (%)	1.02	1.04	-1.59	0.56	1.24	1.18
Non-Feed Beef Costs (%)	1.02	1.04	-1.59	0.56	1.24	1.18
Non-Feed Hog Costs (%)	1.64	2.17	2.07	2.08	2.24	2.36
Annual Change in Consumer Price Index (%)	1.70	2.90	2.90	2.90	2.60	2.40
Annual Interest Rates						
Long-Term (%)	6.97	6.53	6.27	6.50	7.54	7.99
Intermediate-Term (%)	4.53	4.09	4.85	6.09	6.47	6.37
Savings Account (%)	1.66	1.96	3.25	3.95	4.62	4.68
Annual Rate of Change for U.S. Land Prices (%)	5.22	4.28	3.18	1.50	1.98	2.45

Source: Food and Agricultural Policy Research Institute (FAPRI) at the University of Missouri-Columbia and Iowa State University.

Definitions of Variables in the Summary Tables

- **Overall Financial Position, 2003-2007** -- As a means of summarizing the representative farms' economic efficiency, liquidity, and solvency position AFPC classifies each farm as being in either a good, marginal or poor position. AFPC assumes a farm is in a good financial position when it has less than a 25 percent chance each of a cash flow deficit and a 25 percent chance of losing real net worth. If the probabilities of these events are between 25 and 50 percent the farm is classified as marginal. A probability greater than 50 percent places the farm in a poor financial position.
- **Net Income Adjustment (NIA), 2003-2007** -- NIA is the annual increase or decrease in net cash farm income necessary to insure the farm maintains its real net worth during the 2003-2007 period. A positive NIA indicates the additional annual net income needed to maintain real net worth. A negative NIA indicates the largest possible annual loss in net income the farm can endure and still maintain its real net worth through the period.
- **Annual Change in Real Net Worth, 2003-2007** -- Annualized percentage change in the operator's net worth from January 1, 2003 through December 31, 2007, after adjusting for inflation. This value reflects the real annualized increase or decrease in net worth or equity for the farm over the planning horizon including changes in real estate values.
- **Government Payments/Receipts, 2003-2007** -- Sum of all farm program payments (CCP, direct and loan deficiency payments) divided by total receipts received from the market plus CCP, direct and loan deficiency payments, crop insurance indemnities, and other farm related receipts.
- **Total Cash Receipts** -- Sum of cash receipts from all sources, including market sales, CCP and direct payments, loan deficiency payments, crop insurance indemnities, and other farm related receipts. The values in the tables are the average total receipts for each year in the planning horizon.
- **Government Payments** -- Sum of annual counter cyclical payments, direct payments, and marketing loan gains/LDP for crops and the milk program payment for dairy farms. The values in the tables are the averages for each year in the planning horizon.
- **Net Cash Farm Income** -- Equals total cash receipts minus all cash expenses. Net cash farm income is used to pay family living expenses, principal payments, income taxes, self employment taxes, and machinery replacement costs. The values in the tables are the averages for each year in the planning horizon.
- **Probability of a Cash Flow Deficit** -- Is the number of times out of 100 that the farm's annual net cash farm income does not exceed cash requirements for family living, principal payments, taxes (income and self-employment), and actual machinery replacement expenses (not depreciation). This probability is reported for each year of the planning horizon to indicate whether the cash flow risk for a farm increases or decreases over the planning horizon.
- **Ending Cash Reserves** -- Equals total cash on hand at the end of the year. Ending cash equals beginning cash reserves plus net cash farm income and interest earned on cash reserves less principal payments, federal taxes (income and self employment), state income taxes, family living withdrawals, and actual machinery replacement costs (not depreciation).
- **Nominal Net Worth** -- Equity at the end of each year equals total assets including land minus total debt from all sources. Net worth is not adjusted for inflation and averages are reported for each year in the planning horizon.
- **Probability of Decreasing Real Net Worth Over 2001-2007** -- Is the number of times out of 100 that real net worth in 2007 is less than the net worth for the farm at the beginning of 2001.

Summary of Results for the Texas Representative Cotton Farms Under the August 2003 Baseline

- The moderately-sized Texas Southern High Plains cotton farm (TXSP2239) plants just over 1600 acres of cotton, with approximately 22 percent of that land under irrigation. Remaining cultivated land is devoted to peanuts while 183 acres remain in the CRP program. Average annual cash receipts for the farm range from \$668,000 to \$690,000 over the 2003-2007 projection period. Likelihood of a cash flow deficit never exceeds 13 percent. Favorable liquidity and solvency positions lead to a good classification with respect to overall financial condition.
- The large Texas Southern High Plains cotton farm (TXSP3745) plants about 2625 acres of cotton, accounting for almost three-fourths of total cash receipts. Peanuts are planted on the remaining 245 acres of cropland, while 288 acres are in the CRP program. This farm averages 5.8 percent growth in real net worth each year. Probabilities of a cash flow deficit range from 28 to 43 percent. Despite a good solvency position, a marginal liquidity position contributes heavily to this farm's overall marginal classification.
- The Texas Panhandle cotton farm (TXPC2500) is located near Hereford, Texas. This farm plants 1184 acres of cotton annually. Approximately 85 percent of total cotton grown is pivot irrigated, while wheat, grain sorghum, and corn are planted on the remaining cultivated land. Government payments comprise about 26 percent of this farm's total cash receipts. This farm is in a marginal financial condition as the probability of a cash flow deficit increases to 33 percent in the last projected year.
- The Texas Eastern Caprock cotton farm (TXEC5000) is located east of Lubbock in Ralls, Texas. Eighty-six percent of this farm's land is planted in cotton, while wheat and grain sorghum are planted on the remaining 700 acres. Average annual cash receipts fluctuate between \$1.28 million and \$1.34 million for the 2003-2007 period. The probability of a cash flow deficit rises to a high of 32 percent in 2007, contributing to the marginal ranking with respect to overall financial condition.
- The Texas Rolling Plains cotton farm (TXRP2500) plants 1122 acres of dryland, skip-row cotton. Wheat is planted on the remaining acreage, and the farm maintains a 12 head cow-calf operation. This farm is relatively efficient as its cost to receipts ratio remains just over 70 percent. Government payments comprise an average of over 29 percent of total receipts for this farm throughout the projection period. Overall, this farm is in marginal financial condition.

Table 3. Implications of the August 2003 FAPRI Baseline on the Economic Viability of Representative Farms Primarily Producing Cotton.

	TXSP2239	TXSP3745	TXPC2500	TXEC5000	TXRP2500
Overall Financial Position					
2003-2007 Ranking	Good	Marginal	Marginal	Marginal	Marginal
NIA to Maintain Real Net Worth (\$1,000)	-116.45	-112.49	-93.63	-150.77	-42.17
NIA to Maintain Real Net Worth (% Rec.)	-17.14	-12.82	-11.57	-11.42	-16.54
Change Real Net Worth (%)					
2003-2007 Average	9.27	5.84	4.28	9.01	7.02
Govt Payments/Receipts (%)					
2003-2007 Average	24.65	23.78	25.98	25.51	29.44
Cost to Receipts Ratio (%)					
2003-2007 Average	72.83	78.67	80.04	80.32	70.23
Total Cash Receipts (\$1000)					
2001	469.13	559.30	923.30	898.91	215.26
2002	650.19	835.60	817.93	1,274.35	275.23
2003	668.35	863.54	858.91	1,289.03	251.27
2004	680.16	880.16	877.75	1,323.67	253.47
2005	678.52	876.31	885.03	1,321.77	255.34
2006	681.18	876.67	880.61	1,325.90	255.67
2007	689.10	889.24	884.50	1,339.02	259.01
2003-2007 Average	679.46	877.18	877.36	1,319.88	254.95
Government Payments (\$1000)					
2001	128.90	183.69	358.82	483.96	94.71
2002	217.93	272.40	239.40	448.69	90.40
2003	160.86	199.61	230.17	325.86	72.99
2004	163.32	197.77	223.36	304.51	68.68
2005	163.23	201.89	231.28	326.82	72.70
2006	168.22	209.14	229.08	337.05	74.16
2007	164.79	201.08	214.44	312.43	69.40
2003-2007 Average	164.08	201.90	225.67	321.33	71.58
Net Cash Farm Income (\$1000)					
2001	24.37	-49.97	193.20	-77.32	51.46
2002	175.60	176.53	150.56	271.90	106.29
2003	194.36	205.90	184.72	278.41	88.54
2004	198.68	214.44	194.25	302.77	88.06
2005	187.11	199.86	188.81	285.91	86.02
2006	179.17	187.38	169.92	266.66	84.73
2007	187.21	196.16	164.45	260.45	83.98
2003-2007 Average	189.31	200.75	180.43	278.84	86.26
Prob. of a Cash Flow Deficit (%)					
2003	3	43	25	31	25
2004	1	28	16	22	13
2005	13	38	20	25	31
2006	12	37	32	28	28
2007	11	39	33	32	41
Ending Cash Reserves (\$1000)					
2001	-21.82	-139.77	64.35	-197.42	-3.28
2002	74.17	-47.26	69.74	-19.19	35.84
2003	148.29	34.53	101.67	58.54	60.07
2004	230.32	142.22	163.21	196.74	97.42
2005	283.56	198.57	213.89	297.86	127.21
2006	337.70	252.34	241.75	379.15	154.39
2007	397.15	302.75	271.65	449.40	174.63
Nominal Net Worth (\$1000)					
2001	504.93	1,015.39	1,137.71	668.70	302.65
2002	636.82	1,166.23	1,202.55	875.90	352.93
2003	738.62	1,308.44	1,291.48	997.63	396.08
2004	834.05	1,431.00	1,367.61	1,130.83	434.78
2005	910.02	1,514.13	1,432.21	1,235.02	467.90
2006	982.46	1,588.74	1,492.77	1,333.50	499.86
2007	1,074.12	1,678.70	1,559.19	1,428.86	533.68
Prob. of Decreasing Real Net Worth Over 2001-2007 (%)	1	8	1	1	2

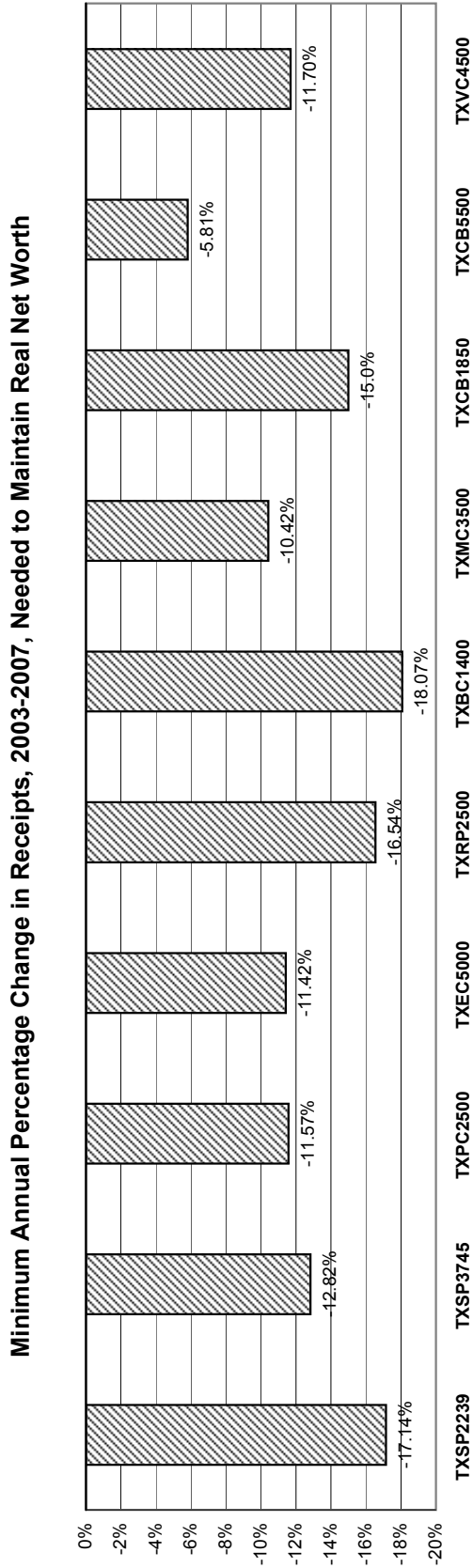
Summary of Results (continued)

- The Texas Blackland cotton farm (TXBC1400) plants 150 acres of cotton each year. Although just over ten percent of its total cultivated land is planted to cotton, the farm generated over 21 percent of its total cash receipts from sales of cotton in 2003. Corn, grain sorghum, and wheat sales along with a 50-head cow-calf operation also contribute to this farm's income. The probability of a cash flow deficit never exceeds 21 percent for any of the projected years. This farm is classified in good overall financial condition.
- The Texas Middle Gulf Coast cotton farm (TXMC3500) plants half of its 3500 acres to cotton annually, accounting for almost 70 percent of gross receipts. The other 1750 acres are divided equally between grain sorghum and corn. This farm receives government payments on 50 rice farm program acres throughout the 2002-2007 period. A marginal liquidity position drives this farm to an overall marginal classification with respect to financial condition.
- Half of the acres on the typical Texas Coastal Bend cotton farm (TXCB1850) are planted to cotton. The farm also grows 775 acres of grain sorghum and 150 acres of corn. The probability of a cash flow deficit fluctuates between 38 and 45 percent for the 2003-2007 period. The farm increases its net worth at an average annual rate of 6.2 percent. This farm is classified in marginal overall condition, largely due to the farm's liquidity position.
- The large Texas Coastal Bend cotton farm (TXCB5500) plants half of its 5500 acres to cotton and the other half to grain sorghum. This farm's average annual cash receipts fall between \$1.35 million and \$1.41 million throughout the projection period. Just under 26 percent of these cash receipts are in the form of government payments. An eight percent chance exists that this farm will lose net worth over the 2001-2007 period. Mostly due to its poor cash flow position, this farm is classified in marginal financial condition.
- The Texas Rio Grande Valley cotton farm (TXVC4500) typically plants 1888 acres of dryland cotton and 500 acres of row-irrigated cotton. This farm plants grain sorghum on the other half of its dryland acreage along with 225 acres of sugarcane. The farm collects an average of 23.9 percent of its total cash receipts from government payments over the 2003-2007 period. A poor cash flow position along with a good solvency position result in the marginal overall classification for this farm's financial condition.

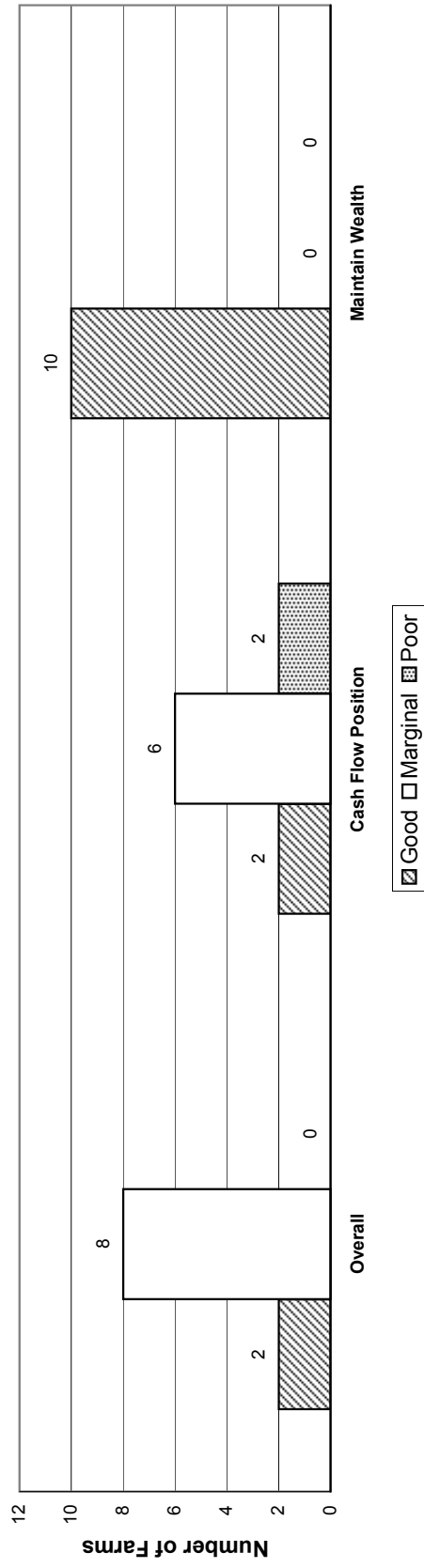
Table 4. Implications of the August 2003 FAPRI Baseline on the Economic Viability of Representative Farms Primarily Producing Cotton.

	TXBC1400	TXMC3500	TXCB1850	TXCB5500	TXVC4500
Overall Financial Position					
2003-2007 Ranking	Good	Marginal	Marginal	Marginal	Marginal
NIA to Maintain Real Net Worth (\$1,000)	-51.91	-133.33	-82.56	-80.40	-152.81
NIA to Maintain Real Net Worth (% Rec.)	-18.07	-10.42	-15.00	-5.81	-11.70
Change Real Net Worth (%)					
2003-2007 Average	5.80	8.47	6.19	4.97	5.79
Govt Payments/Receipts (%)					
2003-2007 Average	21.34	22.12	22.12	25.85	23.95
Cost to Receipts Ratio (%)					
2003-2007 Average	69.88	83.20	78.42	87.58	83.42
Total Cash Receipts (\$1000)					
2001	275.61	1,026.63	467.99	1,298.82	817.62
2002	279.34	1,209.89	523.88	1,342.31	1,227.16
2003	284.64	1,261.67	546.13	1,357.83	1,281.88
2004	284.68	1,285.75	553.10	1,376.37	1,313.94
2005	289.21	1,267.05	543.01	1,384.79	1,310.28
2006	294.60	1,276.31	546.46	1,394.67	1,316.89
2007	292.87	1,306.07	563.21	1,405.58	1,309.83
2003-2007 Average	289.20	1,279.37	550.38	1,383.85	1,306.57
Government Payments (\$1000)					
2001	70.08	369.84	187.89	481.71	288.60
2002	48.58	315.31	133.01	416.05	359.04
2003	65.40	271.90	113.00	362.23	309.60
2004	61.82	257.74	109.72	335.42	296.91
2005	60.16	270.55	114.16	355.63	312.76
2006	59.57	279.11	116.94	361.90	317.88
2007	56.58	256.92	108.82	332.66	295.58
2003-2007 Average	60.71	267.24	112.53	349.56	306.54
Net Cash Farm Income (\$1000)					
2001	78.59	80.71	74.81	191.97	-59.02
2002	89.60	239.54	137.45	231.23	229.33
2003	90.70	281.20	160.28	232.10	275.66
2004	90.04	283.90	152.72	224.32	287.27
2005	92.88	238.21	139.13	206.16	261.35
2006	94.74	228.64	137.23	183.46	240.52
2007	94.97	243.97	150.63	177.62	222.69
2003-2007 Average	92.67	255.18	148.00	204.73	257.50
Prob. of a Cash Flow Deficit (%)					
2003	17	34	39	40	39
2004	16	32	38	40	49
2005	18	48	43	43	45
2006	21	44	45	49	57
2007	21	43	43	51	54
Ending Cash Reserves (\$1000)					
2001	12.36	-20.67	33.13	93.05	-151.48
2002	31.75	94.86	92.69	204.42	-8.46
2003	55.40	190.65	144.24	263.13	57.65
2004	89.11	312.34	192.75	352.72	146.81
2005	118.91	356.28	229.16	404.00	200.14
2006	146.44	420.97	263.39	418.29	191.79
2007	175.06	500.12	308.14	438.87	214.68
Nominal Net Worth (\$1000)					
2001	454.77	663.96	624.69	833.06	1,285.30
2002	489.80	796.70	752.73	960.49	1,506.39
2003	535.69	917.87	835.19	1,049.83	1,659.28
2004	574.58	1,035.41	893.94	1,133.93	1,810.44
2005	612.14	1,099.09	949.14	1,203.68	1,909.35
2006	647.09	1,184.05	1,010.14	1,243.83	2,003.66
2007	687.52	1,293.07	1,087.42	1,310.67	2,124.46
Prob. of Decreasing Real Net Worth Over 2001-2007 (%)	1	2	1	8	2

Figure 2. Selected Results for Texas Representative Cotton Farms



Economic and Financial Position Over the Period, 2003-2007, for all Cotton Farms



Risk Graph Explanation

The following charts provide an indication of the risk in net cash farm income (cash receipts minus cash expenses) for each of the representative cotton farms.

The middle line on the graph is the average of 500 simulations for each year. The inside set of lines with square markers are the 25th and 75th percentiles. This means that 50 percent of the annual simulated values occur between the two lines. The 5th and 95th percentile lines (indicated by the circle markers) contain 90 percent of the 500 projected values for each of the years. These outer lines are included to provide an indication of the range of possible outcomes that could occur.

Most farms have a wide range between the top and bottom lines indicating substantial risk on net cash farm income. However, most farms also have one-half of their projected values in a fairly tight range around the average.

Summary

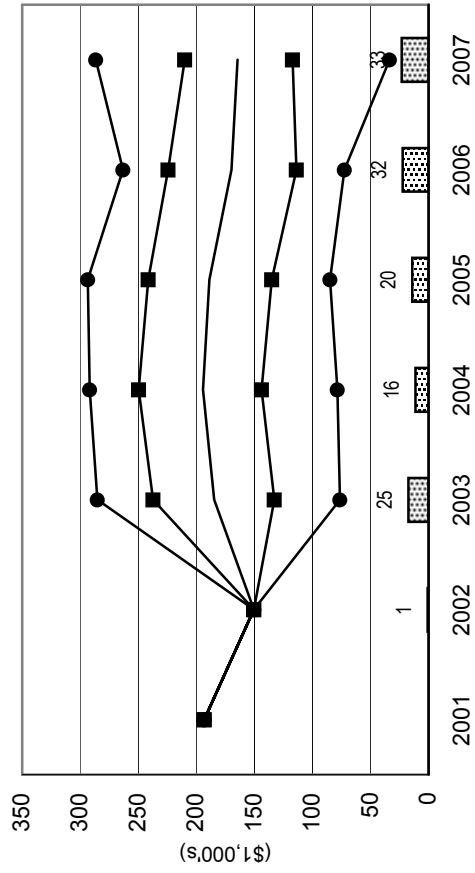
Eight of the representative farms are classified as marginal under the FAPRI August 2003 Baseline. Two farms are classified by AFPC in good financial condition. These two farms may be unduly influenced by peanuts for the Southern Plains farm and feed grains for the Blacklands farm.

Overall, the ten cotton farms appear to be able to cope with the relatively low cotton prices projected in the Baseline.

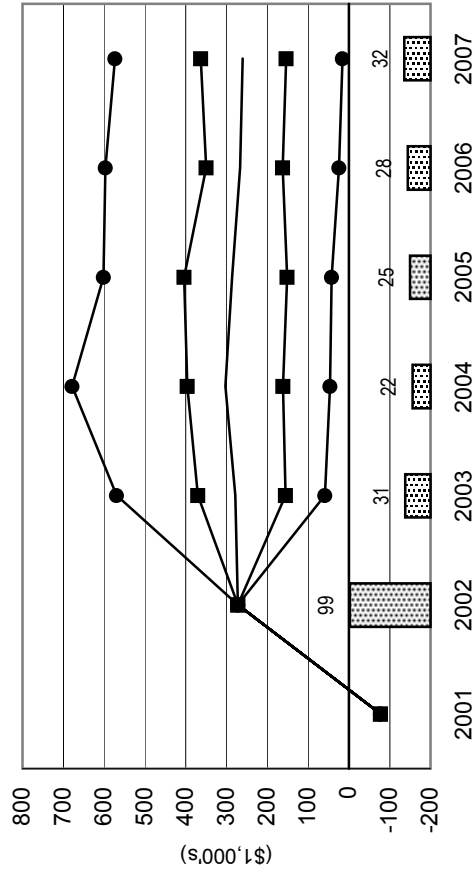
Figure 3. Net Cash Farm Income and Probabilities of a Cash Flow Deficit: Cotton Farms

— Average NCFI ■ 25 & 75 Percentile NCFI ● Prob. of Cash Flow Deficit

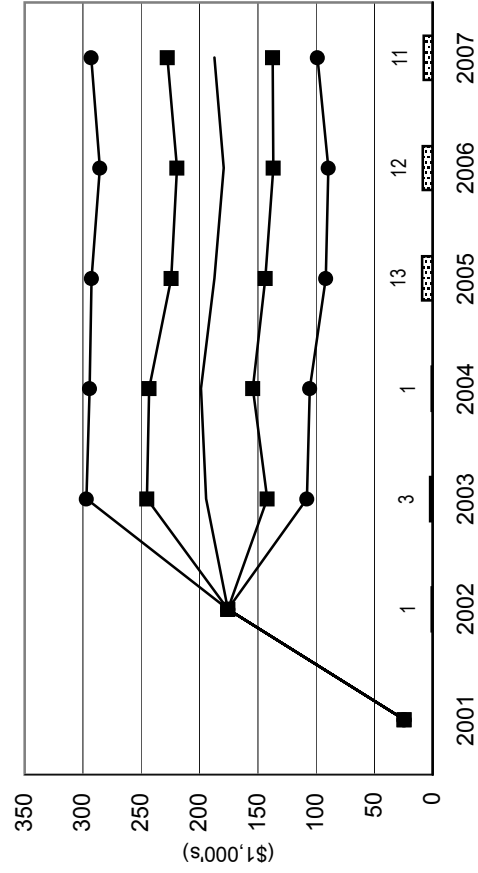
TXPC2500 Texas Panhandle Cotton Farm



TXEC5000 Texas Eastern Caprock Cotton Farm



TXSP2239 Texas Southern Plains Cotton Farm



TXSP3745 Large Texas Southern Plains Cotton Farm

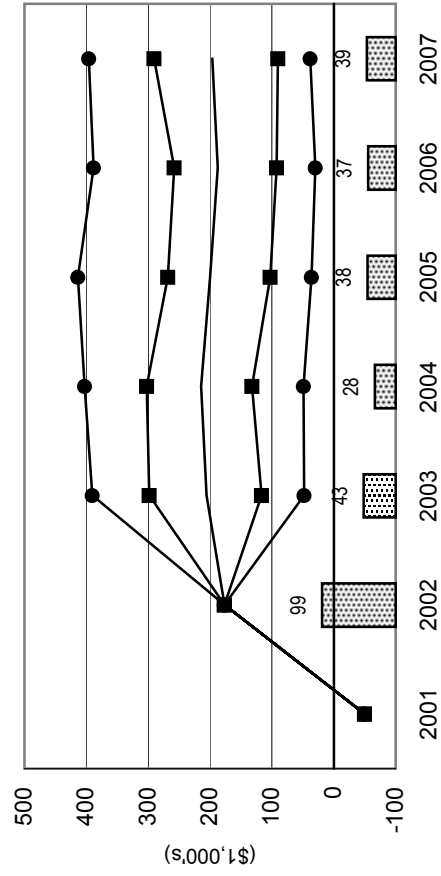
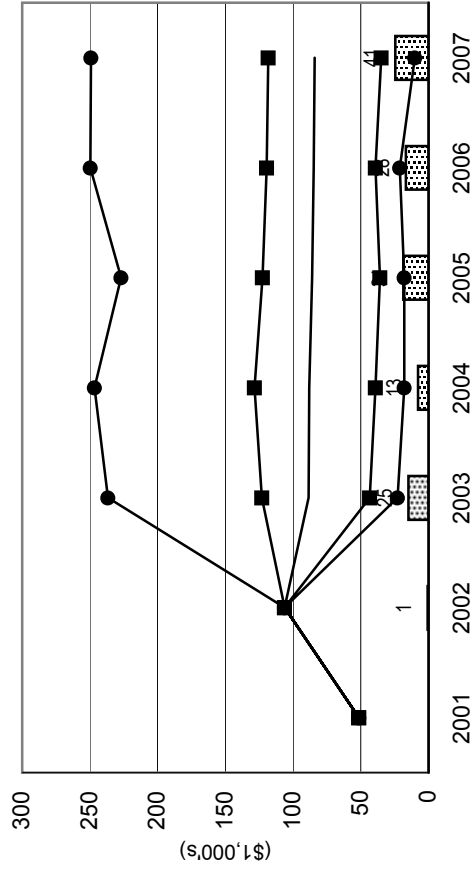


Figure 4. Net Cash Farm Income and Probabilities of a Cash Flow Deficit: Cotton Farms

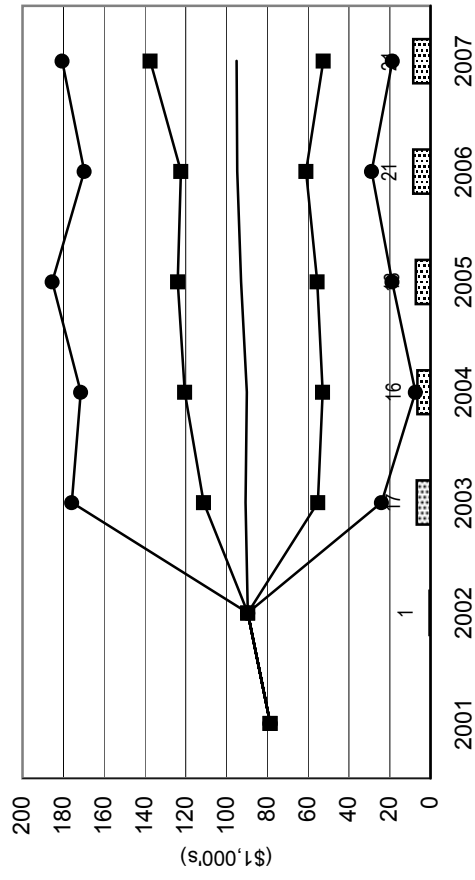
— Average NCFI ■ 25 & 75 Percentile NCFI ● Prob. of Cash Flow Deficit

■ 5 & 95 Percentile NCFI ▨ Prob. of Cash Flow Deficit

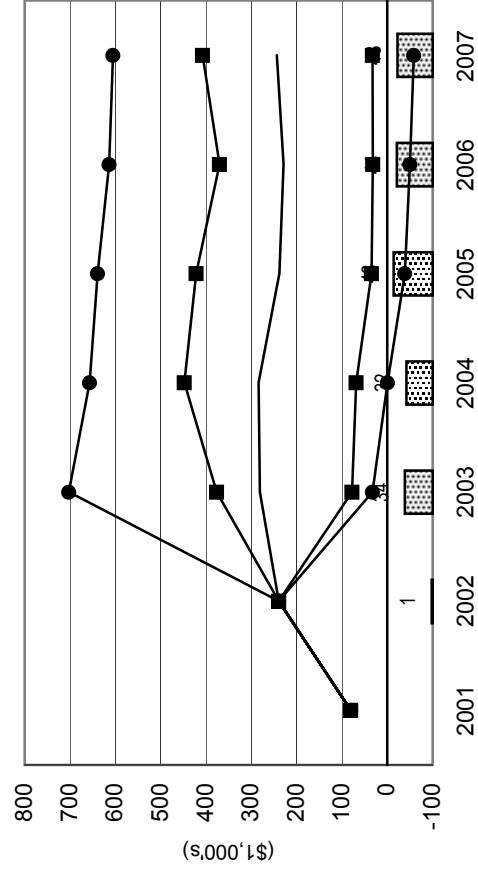
TXRP2500 Texas Rolling Plains Cotton Farm



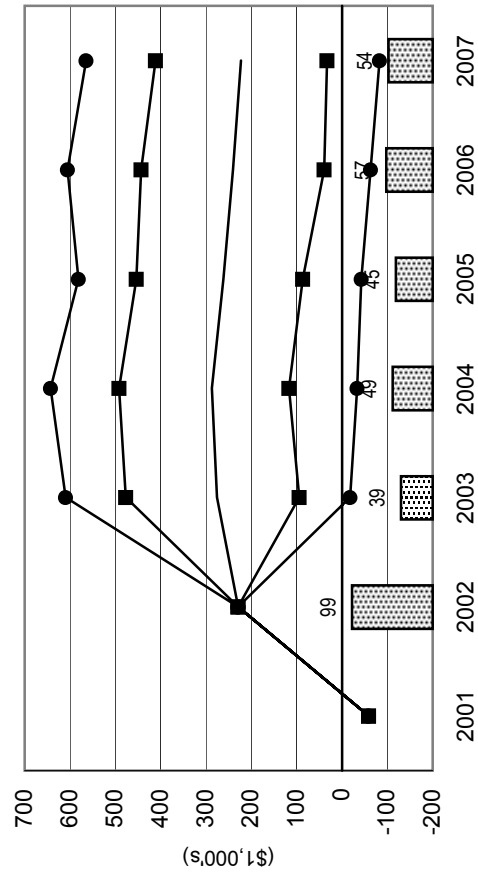
TXBC1400 Texas Blacklands Cotton Farm



TXMC3500 Texas Mid-Coast Cotton Farm



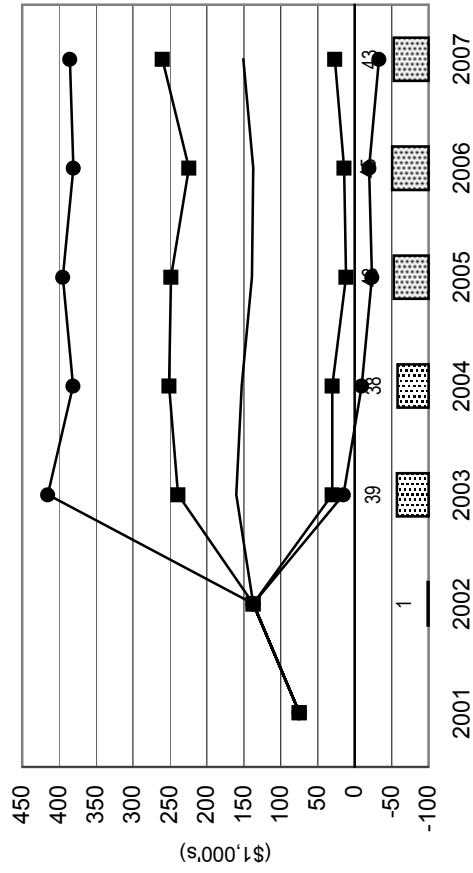
TXVC4500 Texas Valley Cotton Farm



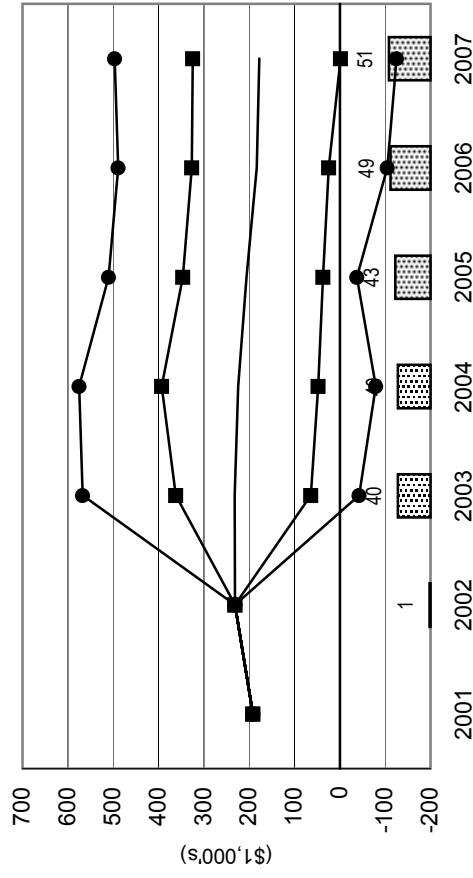
**Figure 5. Net Cash Farm Income and Probabilities of a Cash Flow Deficit:
Cotton Farms**

— Average NCFI ■ 25 & 75 Percentile NCFI ● Prob. of Cash Flow Deficit

TXCB1850 Texas Coastal Bend Cotton Farm



TXCB5500 Large Texas Coastal Bend Cotton Farm



**APPENDIX A:
CHARACTERISTICS OF
REPRESENTATIVE FARMS**

2003 CHARACTERISTICS OF PANEL FARMS PRODUCING COTTON

- TXSP2239** A 2,239-acre Texas South Plains (Dawson County) cotton farm that is moderate-sized for the area. TXSP2239 plants 1,616 acres of cotton (1,250 dryland, 366 irrigated), 270 acres of peanuts, and has 183 acres in CRP. For 2003, 58 percent of receipts came from cotton.
- TXSP3745** The Texas South Plains (Dawson County) is home to this 3,745-acre, large-sized cotton farm that grows 2,625 acres of cotton (2,120 dryland, 505 irrigated), 245 acres of peanuts, and has 288 acres in CRP. Cotton sales comprised 73 percent of 2003 receipts.
- TXPC2500** The Texas Panhandle is home to this 2,500-acre farm (Deaf Smith County). Annually, cotton is planted on 1,184 acres (1,000 irrigated and 184 dryland), 308 acres to sorghum (125 irrigated and 183 dryland), 883 acres planted to wheat (700 irrigated and 183 dryland), and 125 irrigated acres are planted to corn. Sixty-one percent of 2003 cash receipts were generated by cotton sales.
- TXEC5000** This 5,000-acre farm is located on the Eastern Caprock of the Texas South Plains (Crosby County). Annually, 4,300 acres are planted to cotton (2,800 irrigated and 1,500 dryland), 400 acres of wheat (100 irrigated and 300 dryland), and 300 acres of dryland sorghum. In 2003, cotton sales accounted for 96 percent of gross receipts.
- TXRP2500** TXRP2500 is a 2,500-acre cotton farm located in the Rolling Plains of Texas (Jones County). This farm plants 1,240 acres of cotton and 825 acres of winter wheat each year. Eighty percent of 2003 farm receipts came from cotton sales. Twelve head of beef cows generated approximately two percent of farm receipts.

Appendix Table A1. Characteristics of Panel Farms Producing Cotton.

	TXSP2239	TXSP3745	TXPC2500	TXEC5000	TXRP2500
County	Dawson	Dawson	Deaf Smtih	Crosby	Jones
Total Cropland	2,239.00	3,745.00	2,500.00	5,000.00	2,500.00
Acres Owned	670.00	1,650.00	1,250.00	640.00	400.00
Acres Leased	1,569.00	2,095.00	1,250.00	4,360.00	2,100.00
Pastureland					
Acres Leased	0.00	0.00	0.00	0.00	500.00
Assets (\$1000)					
Total	788.00	1,449.00	1,532.00	1,179.00	438.00
Real Estate	352.00	863.00	677.00	341.00	194.00
Machinery	327.00	586.00	770.00	787.00	187.00
Other & Livestock	109.00	0.00	85.00	51.00	57.00
Debt/Asset Ratios					
Total	0.11	0.13	0.17	0.16	0.12
Intermediate	0.08	0.07	0.17	0.16	0.09
Long Run	0.15	0.18	0.16	0.15	0.16
Number of Livestock					
Beef Cows	0.00	0.00	0.00	0.00	12.00
2003 Gross Receipts (\$1,000)*					
Total	632.80	822.80	831.10	1,276.60	236.80
Cattle	0.00	0.00	0.00	0.00	4.30
	0.00	0.00	0.00	0.00	0.02
Cotton	368.10	604.30	509.90	1,228.50	191.40
	0.58	0.73	0.61	0.96	0.81
Sorghum	0.00	0.00	35.40	0.00	0.00
	0.00	0.00	0.04	0.00	0.00
Wheat	0.00	0.00	112.90	19.00	41.20
	0.00	0.00	0.14	0.02	0.17
Corn	0.00	0.00	105.20	0.00	0.00
	0.00	0.00	0.13	0.00	0.00
Peanuts	259.60	208.90	0.00	0.00	0.00
	0.41	0.25	0.00	0.00	0.00
Sorghum	0.00	0.00	0.00	29.20	0.00
	0.00	0.00	0.00	0.02	0.00
Other Receipts	5.10	9.50	67.70	0.00	0.00
	0.01	0.01	0.08	0.00	0.00
2003 Planted Acres**					
Total	2,069.00	3,158.00	2,500.00	5,000.00	1,947.00
Cotton	1,616.00	2,625.00	1,184.00	4,300.00	1,122.00
	0.78	0.83	0.47	0.86	0.58
Sorghum	0.00	0.00	308.00	0.00	0.00
	0.00	0.00	0.12	0.00	0.00
Wheat	0.00	0.00	883.00	400.00	825.00
	0.00	0.00	0.35	0.08	0.42
Corn	0.00	0.00	125.00	0.00	0.00
	0.00	0.00	0.05	0.00	0.00
Peanuts	270.00	245.00	0.00	0.00	0.00
	0.13	0.08	0.00	0.00	0.00
Sorghum	0.00	0.00	0.00	300.00	0.00
	0.00	0.00	0.00	0.06	0.00
CRP	183.00	288.00	0.00	0.00	0.00
	0.09	0.09	0.00	0.00	0.00

*Receipts for 2003 are included to indicate the relative importance of each enterprise to the farm. Percents indicate the percentage of the total receipts accounted for by the livestock categories and the crops.

**Acreages for 2003 are included to indicate the relative importance of each enterprise to the farm. Total planted acreage may exceed total cropland available due to double cropping. Percents indicate the percentage of total planted acreage accounted for by the crop.

2003 CHARACTERISTICS OF PANEL FARMS PRODUCING COTTON (continued)

- TXBC1400** This 1,400-acre farm is located on the Blackland Prairie of Texas (Williamson County). TXBC1400 plants 150 acres of cotton, 900 acres of corn, 250 acres of sorghum, and 100 acres of winter wheat annually. Additionally, this farm has a 50-head beef cow herd that is pastured on rented ground that cannot be farmed. Cotton generated 21 percent of 2003 total receipts, corn generated 53 percent, and sorghum generated 14 percent.
- TXMC3500** A 3,500-acre cotton farm located on the middle Texas Gulf Coast (Jackson County) that farms 1,750 acres of cotton and 875 acres each of sorghum and corn. In 2003, cotton sales comprised 70 percent of total cash receipts on this operation.
- TXCB1850** A 1,850-acre cotton farm located on the Texas Coastal Bend (San Patricio County) that farms 925 acres of cotton, 775 acres of sorghum, and 150 acres of corn annually. Seventy-two percent of 2003 cash receipts were generated by cotton.
- TXCB5500** Nueces County, Texas, is home to this 5,500-acre farm. Annually, 2,750 acres is planted to cotton and 2,750 acres of sorghum. Cotton sales accounted for 76 percent of 2003 receipts.
- TXVC4500** This 4,500-acre farm is located in the lower Rio Grande Valley of Texas (Willacy County) and plants 2,388 acres to cotton (500 irrigated and 1,888 acres dryland), 1,887 acres to sorghum, and 225 acres of sugarcane. In 2003, 71 percent of TXVC4500's cash receipts were generated by cotton sales.

Appendix Table A2. Characteristics of Panel Farms Producing Cotton.

	TXBC1400	TXMC3500	TXCB1850	TXCB5500	TXVC4500
County	Williamson	Jackson	San Patricio	Nueces	Willacy
Total Cropland	1,400.00	3,500.00	1,850.00	5,500.00	4,500.00
Acres Owned	150.00	350.00	360.00	225.00	900.00
Acres Leased	1,250.00	3,150.00	1,490.00	5,275.00	3,600.00
Pastureland					
Acres Owned	30.00	0.00	0.00	0.00	0.00
Acres Leased	210.00	0.00	0.00	0.00	0.00
Assets (\$1000)					
Total	602.00	1,012.00	937.00	1,259.00	2,036.00
Real Estate	310.00	311.00	493.00	246.00	1,408.00
Machinery	209.00	539.00	276.00	748.00	607.00
Other & Livestock	83.00	161.00	169.00	265.00	21.00
Debt/Asset Ratios					
Total	0.12	0.12	0.13	0.16	0.20
Intermediate	0.08	0.13	0.09	0.17	0.31
Long Run	0.16	0.10	0.16	0.16	0.16
Number of Livestock					
Beef Cows	50.00	0.00	0.00	0.00	0.00
2003 Gross Receipts (\$1,000)*					
Total	277.40	1,210.70	521.70	1,337.20	1,225.60
Cattle	20.20 0.07	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00
Cotton	59.00 0.21	841.90 0.70	377.20 0.72	1,018.30 0.76	866.50 0.71
Sorghum	40.00 0.14	164.90 0.14	123.30 0.24	318.90 0.24	236.70 0.19
Wheat	10.50 0.04	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00
Corn	145.70 0.53	196.30 0.16	21.20 0.04	0.00 0.00	0.00 0.00
Rice	0.00 0.00	7.50 0.01	0.00 0.00	0.00 0.00	0.00 0.00
Sugar Cane	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	122.40 0.10
Other Receipts	2.00 0.01	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00
2003 Planted Acres**					
Total	1,400.00	3,500.00	1,850.00	5,500.00	4,500.00
Cotton	150.00 0.11	1,750.00 0.50	925.00 0.50	2,750.00 0.50	2,387.50 0.53
Sorghum	250.00 0.18	875.00 0.25	775.00 0.42	2,750.00 0.50	1,887.50 0.42
Wheat	100.00 0.07	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00
Corn	900.00 0.64	875.00 0.25	150.00 0.08	0.00 0.00	0.00 0.00
Sugar Cane	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	225.00 0.05

*Receipts for 2003 are included to indicate the relative importance of each enterprise to the farm. Percents indicate the percentage of the total receipts accounted for by the livestock categories and the crops.

**Acreages for 2003 are included to indicate the relative importance of each enterprise to the farm. Total planted acreage may exceed total cropland available due to double cropping. Percents indicate the percentage of total planted acreage accounted for by the crop.

**APPENDIX B:
LIST OF PANEL FARM
COOPERATORS**

TEXAS COTTON FARMS

Texas - Blackland Prairie

Facilitator

Mr. Ronnie Leps - County Extension Agent, Williamson County

Panel Participants

Mr. Bob Bartosh

Mr. Herbert Raesz

Mr. Lonny Rinderknecht

Mr. Doug Schernik

Mr. Ken Seggern

Mr. Donald Stolte

Texas - Coastal Bend

Facilitator

Dr. Larry Falconer - Extension Economist - Management, Texas A&M University

Mr. Mark Miller - Chief Operations Officer, Texas AgFinance

Mr. Jeffrey Stapper - County Extension Agent, San Patricio County and Aransas County

Panel Participants

Mr. Marvin Beyer, Jr.

Mr. Brad Bickham

Mr. Clarence Chopelas

Mr. Jimmy Dodson

Mr. Joel Hoskinson

Mr. Wayne Lambert

Mr. Larry McNair

Mr. Mark Morris

Mr. Darby Salge

Texas - Eastern Caprock

Facilitator

Mr. Jason Cox - Vice President, Ag Texas Farm Credit Services

Panel Participants

Mr. Lloyd Arthur

Mr. Brooks Ellison

Mr. Edwin Moore

Mr. Marvin Schoepf

Texas - Mid Coast

Facilitator

Mr. Jeff Nunley - Executive Director, South Texas Cotton & Grain Assn.

Panel Participants

Mr. Daniel Gavaronic

Mr. Joe Jenkins

Mr. Keith Johnson

Mr. Rob Kainer

Mr. Mark Malaer

Mr. Dwain Nunley

Texas - Panhandle

Facilitator

Mr. Sean Smith - Credit Office President, First Ag Credit

Panel Participants

Mr. Michael Carlson

Mr. Roy Carlson

Mr. Steve Hoffman

Mr. Harold Sides

Texas - Rio Grande Valley

Facilitator

Mr. Reagan Florence - Exec. VP - Chief Lending Officer, Ag Credit of South Texas

Panel Participants

Mr. Derrick Swanberg

Mr. Marshall Swanberg

Ms. Mitzi Swanberg-Anzaldua

Mr. Mark Willis

TEXAS COTTON FARMS (continued)

Texas - Rolling Plains

Facilitator

Mr. Stan Bevers - Extension Economist - Management, Texas A&M University

Mr. Mike Sloan - Regional Vice President, First Ag Credit

Mr. Todd Vineyard - County Extension Agent, Jones County

Panel Participants

Mr. Dennis Olson

Mr. Ronnie Richmond

Mr. Ronnie Riddle

Mr. Dale Spurgin

Mr. Ferdie Walker

Texas - South Plains

Facilitator

Mr. John Farris - County Extension Agent, Dawson County

Dr. Jackie Smith - Extension Economist - Management, Texas A&M University

Panel Participants

Mr. Steven Archer

Mr. Brad Boyd

Mr. Jerry Chapman

Mr. Mark Furlow

Mr. Kent Nix

Mr. Donald Vogler

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