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FACTORS AFFECTING SHIFTS IN COTTON AREA IN THE U.S.

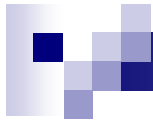
John Robinson  
Associate Professor and Extension Economist/Cotton Marketing  
Texas Cooperative Extension



# **Factors Affecting Shifts in Cotton Area in the U.S.**

**John Robinson**

**Associate Professor and  
Extension Economist/Cotton Marketing  
Texas Cooperative Extension  
[jrcr@tamu.edu](mailto:jrcr@tamu.edu)**




# Contents

- **Outlook For Major Cost Items**
- **Representative Budgets**
- **Calculation of Breakeven Prices**



# Sources of Cost Information

- **Extension Planning Budgets**, e.g., Texas' <http://agecoext.tamu.edu/budgets/>  
Mississippi's <http://www.agecon.msstate.edu/research/budgets.php>  
Georgia's <http://www.ces.uga.edu/Agriculture/agecon/printedbudgets.htm>  
Other States:  
<http://www.cottoninc.com/ProductionEconomics/CottonProductionBudgets/>
- **Your State's Farm Business Records Organization or strategic planning program**, e.g., A&M's [FARM Assistance](#) program, using your own records.
- **Texas A&M's Agriculture and Food Policy Center** periodically publishes cost and financial information from representative cotton farming operations. Their reports can be found at <http://www.afpc.tamu.edu/pubs/>
- **Interactive, on-line cost calculators, like these:**  
Texas Tech's <http://www.aeco.ttu.edu/CER-Institute/Resourcepage.htm> or  
Georgia's <http://www.ces.uga.edu/Agriculture/agecon/interactive/cotton/general.html>
- **USDA's Economic Research Service** conducts nationwide surveys of farmers, and publishes costs of production estimates based on those surveys. This information is available on-line at <http://www.ers.usda.gov/data/costsandreturns/>



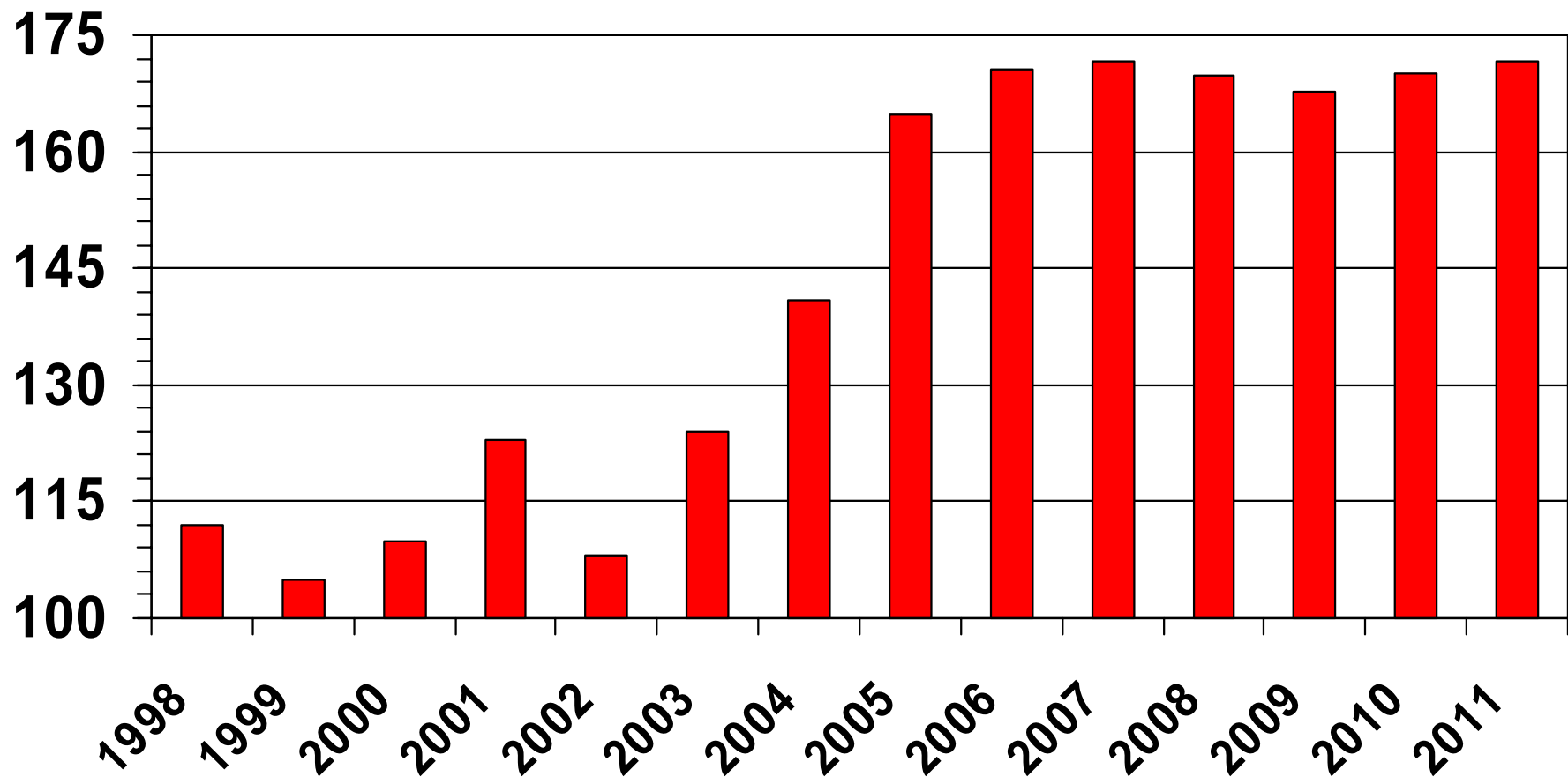
# **Economic Outlook for Representative Cotton Farms**

**(From *AFPC*, 2006)**

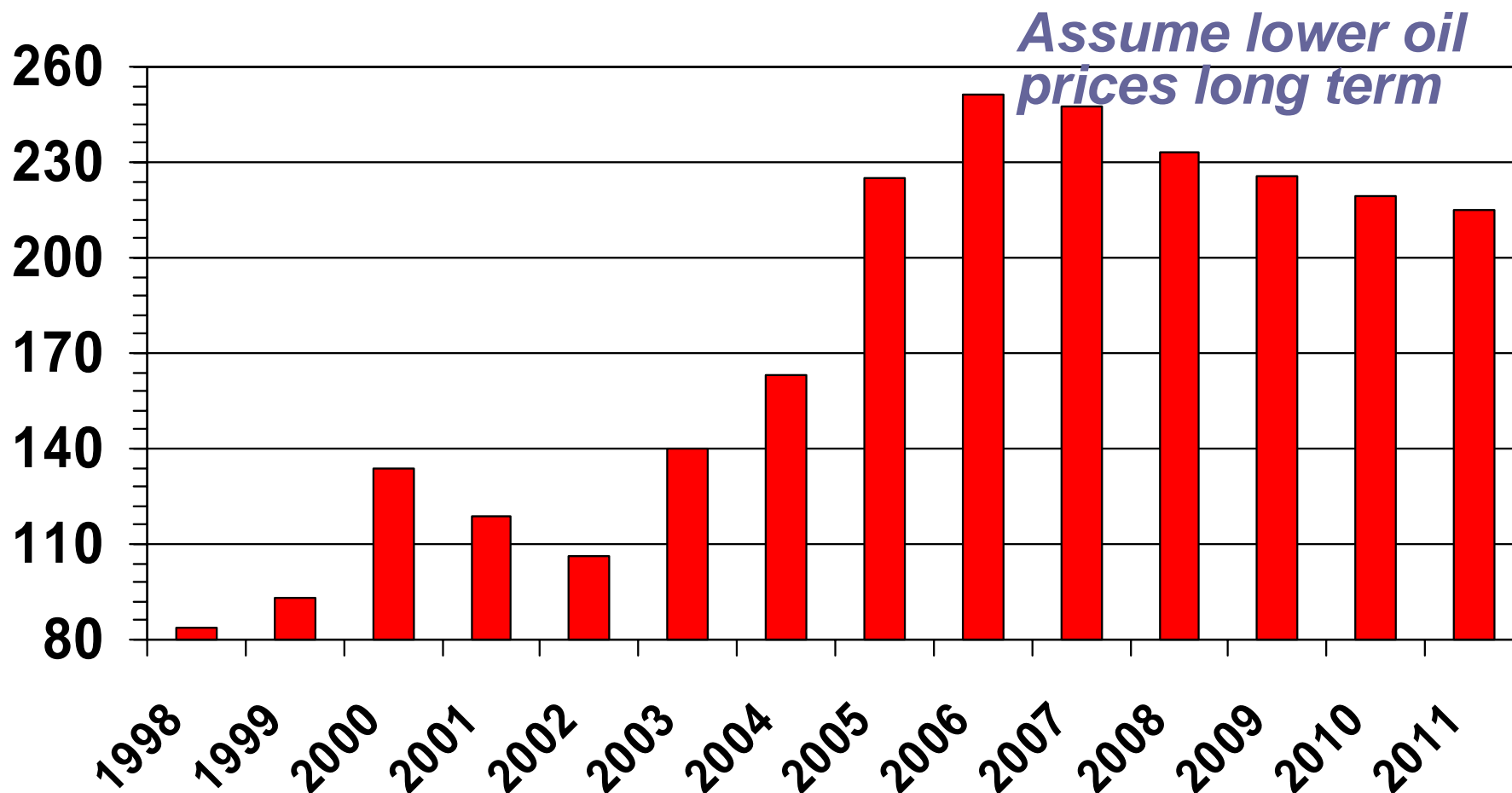
**“The majority of cotton farms are in poor overall financial condition under the August 2006 Baseline... In addition [to drought], the poor financial performance is attributable in part to the large increase in input prices.”**

- \$ Energy (fuel, fertilizer)**
- \$ Machinery (steel, energy)**
- \$ Seed/tech fees**

## Index of Prices Paid for Fertilizer, 1998-2005 with FAPRI Projections, 2006-2011



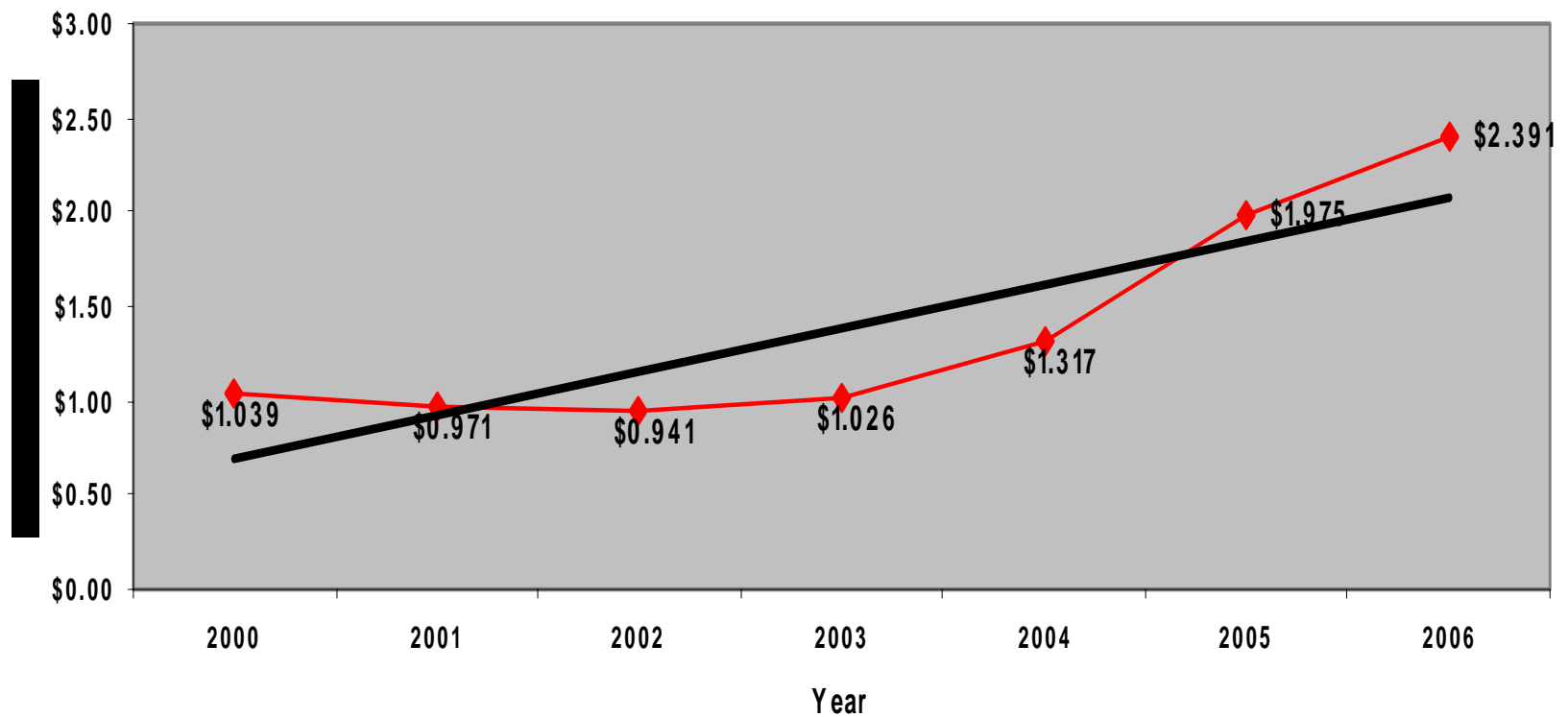
# Index of Prices Paid for Fuel, 1998-2005 with FAPRI Projections, 2006-2011





# Long Term Trend of Diesel

Diesel Fuel Price Trend



# NYMEX Mar07 Heating Oil

NYMEX:HO.H07 1 Year Daily

NYMEX HEATING OIL Mar 2007

(c)2007 INO.com





# NYMEX Mar07 Crude Oil

NYMEX:CL.H07 1 Year Daily

NYMEX CRUDE OIL Mar 2007

(c)2007 INO.com





# Is This Changing?

- **Heating Oil (diesel) and Crude Oil prices had been falling in Fall '06**
  - Didn't have disruptive hurricanes in '06
  - Late 2006 was very mild in the Northeast so reduced demand for home heating oil and large oil inventories
- **The advent of colder weather in Jan-Feb. brought nearby prices back up**
- **Recent opposing forces :**
  - Expected reductions in distillate/gasoline inventory, but expected rise in crude oil inventories
  - Tension with Iran & snowy weather in Northeast

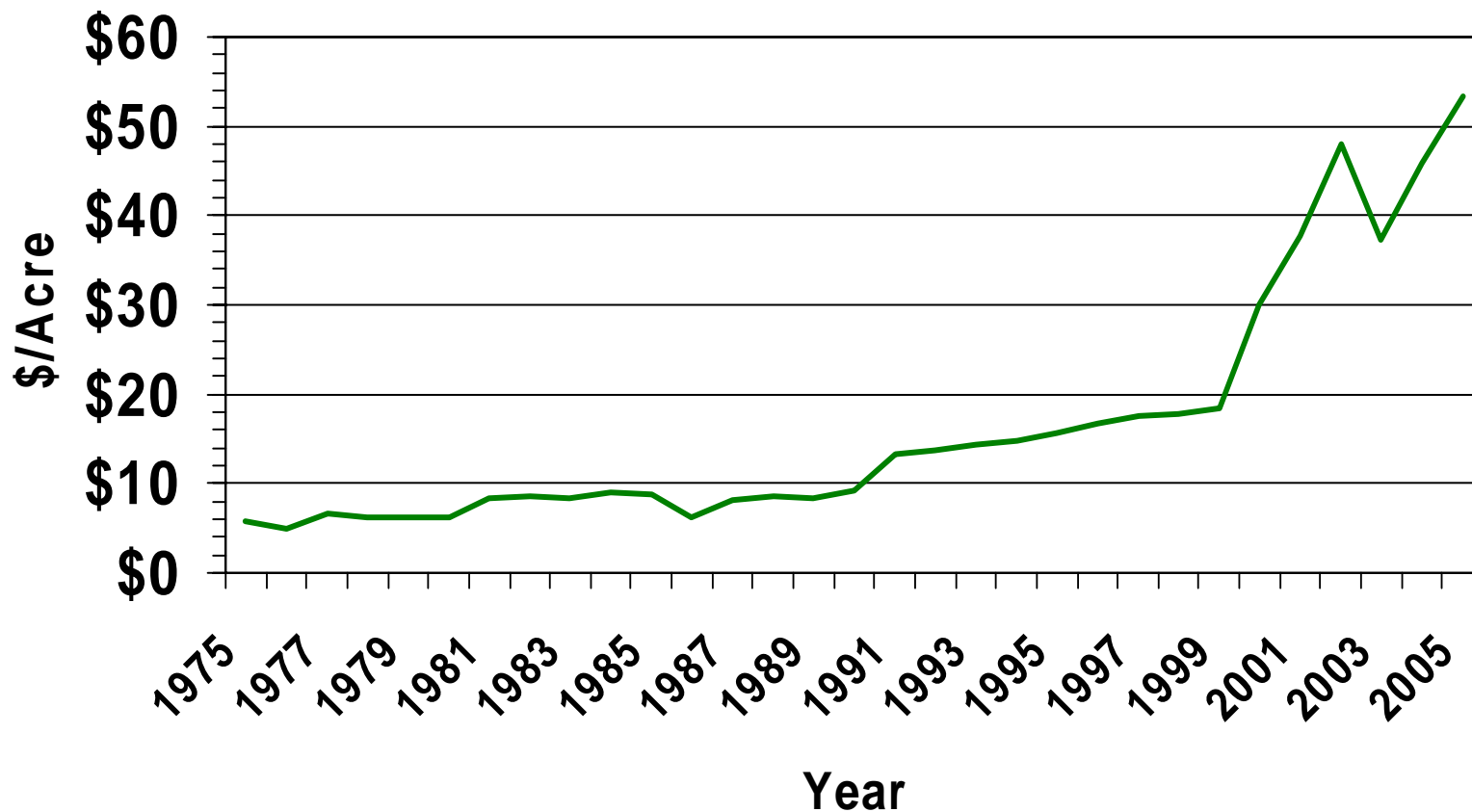
# Does It Matter? It Depends...

<b>Diesel Price Variations and Net Returns Above Total Specified Expenses</b>					
	<i>Return Per Acre Above Total Specified Expenses</i>				
<b><i>Diesel Price Variation</i></b>		Cotton	Soybean	Soy/Wheat	Corn
-25%	\$1.81	\$41.30	\$160.29	\$201.68	\$119.26
-20%	\$1.93	\$39.47	\$159.67	\$199.16	\$117.04
-15%	\$2.05	\$37.65	\$159.03	\$196.63	\$114.82
-10%	\$2.17	\$35.83	\$158.39	\$194.11	\$112.60
-5%	\$2.29	\$34.01	\$157.76	\$191.58	\$110.38
Actual	\$2.41	\$32.18	\$157.15	\$189.08	\$108.18
5%	\$2.53	\$30.36	\$156.50	\$186.54	\$105.94
10%	\$2.65	\$28.54	\$155.87	\$184.02	\$103.72
15%	\$2.77	\$26.72	\$155.23	\$181.51	\$101.50
20%	\$2.89	\$24.89	\$154.60	\$178.99	\$99.28
25%	\$3.01	\$23.07	\$153.97	\$176.48	\$97.06

# USDA Estimates of U.S. Cotton Seed Expense Per Acre, 1975 - 2005



**NOTE:**  
MSU  
Delta  
Budgets  
for 2007  
project  
\$75/acre  
for BG/RR  
& BGII  
Flex  
systems



**Source:** USDA/ERS/NASS

**Note:** These represent weighted avg. seed expenses across the U.S., including tech fees

**Note:** Unadjusted for inflation

# Representative Delta Cotton Budget:

8R-38" Conservation Tillage,  
BtRR, Estimated for 2007.

Source: Miss. State Univ.

ITEM	UNIT	PRICE (dollars)	QUANTITY	AMOUNT (dollars)
<i>Income</i>				
Cotton Lint	lb.	0.55	1100	605.00
Cotton Seed	lb.	0.04	1350	58.05
				-----
<i>Total Income</i>				\$663.05
<i>Direct Expenses</i>				
Custom Spray	acre	27.00	1	27.00
Harvest Aids	acre	15.51	1	15.51
Gin/Dry	acre	81.00	1	22.95
Fertilizers	acre	75.63	1	75.63
Herbicides	acre	44.09	1	44.09
Insecticides	acre	50.58	1	50.58
Seed/Plants	acre	23.10	1	23.10
Technology Fee	acre	54.50	1	54.50
Growth Regulators	acre	11.22	1	11.22
Service Fee	acre	7.00	1	7.00
Custom Fert/Lime	acre	25.00	1	25.00
Hand Labor	hour	6.44	0.6955	4.49
Operator Labor	hour	9.41	1.3672	12.89
Unallocated Labor	hour	9.39	1.0937	10.28
Diesel Fuel	gallon	2.41	15.1853	36.60
Repair & Maintenance	acre	25.47	1	25.47
Interest On Op. Cap.	acre	16.36	1	16.36
				-----
<b>Total Direct Expenses</b>				<b>\$520.72</b>
<i>Returns Above Direct Expenses</i>				\$142.33
<i>Total Fixed Expenses</i>				\$110.15
				-----
<b>Total Specified Expenses</b>				<b>\$630.87</b>
<b>Returns Above Total Specified Expenses</b>				<b>\$32.18</b>

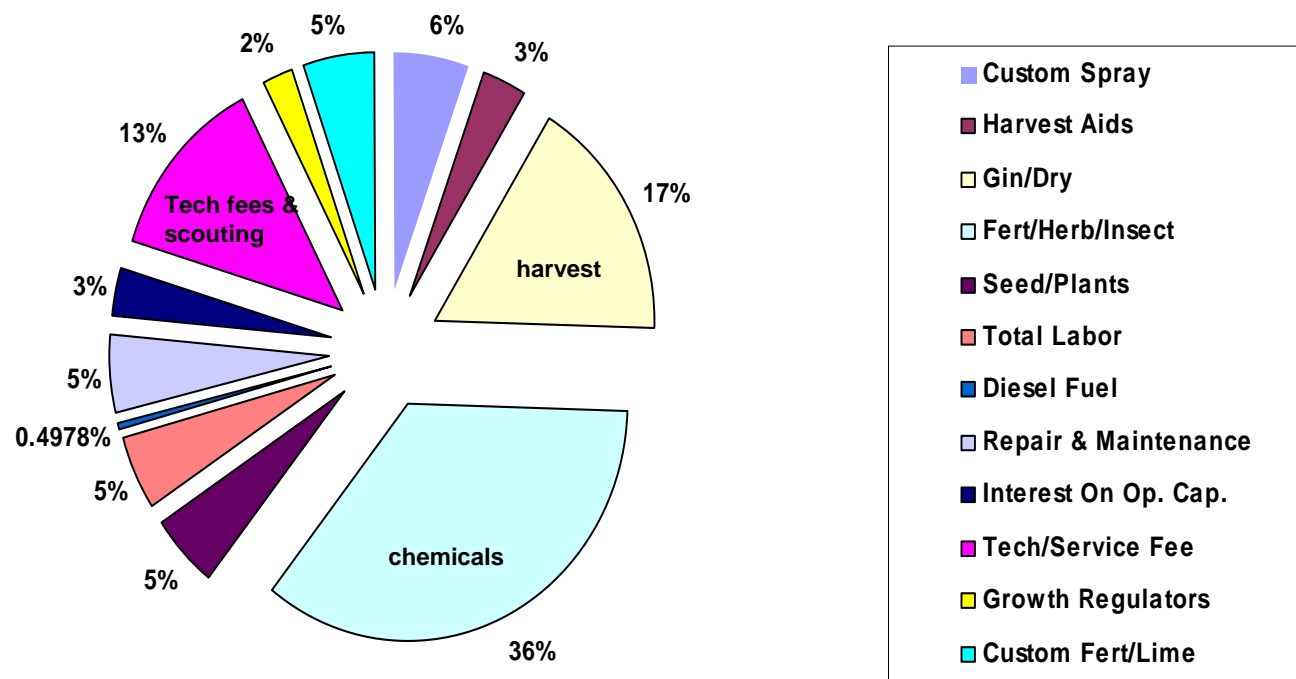
Total Direct Expenses: **\$521/acre**

Total Expenses: **\$630/acre**

Net Returns: **\$32/acre**

# Delta Cotton Budget Breakdown of \$631/ac. in Total Specified Expenses

## Major Cost Categories of Total Direct Expenses



*Point: Again, fuel is a relatively small share of cost*

*Point: Huge share devoted to fertility and pest management inputs. How well you manage/implement these technologies gives you more control over costs.*





# **Calculation of Breakeven Prices: Delta Crops Example**

<b>Crop</b>	<b>To Cover Total Direct Costs</b>	<b>To Cover Total Specified Expenses</b>
<b>Cotton</b>	<b>\$0.47</b>	<b>\$0.57</b>
<b>Soybeans</b>	<b>\$2.59</b>	<b>\$3.14</b>
<b>Soybeans/ Wheat</b>	<b>\$2.96</b>	<b>\$3.58</b>
<b>Corn</b>	<b>\$2.07</b>	<b>\$2.43</b>

# Comparison of Delta Cotton with Alternative Delta Crops

What price of cotton (market+LDP) is necessary to break-even with corn, soybeans, or soybean-wheat rotation? (As of early January)

Essentially asking for the  $P_{cot}$  that solves this equation of net returns:  $P_{cot} * Y_{cot} - C_{cot} = P_{corn} * Y_{corn} - C_{corn}$

<b>Pcot =</b>	<b>\$0.67</b>	<b>\$0.72</b>	<b>\$0.75</b>
	to BE	to BE	to BE
	w/ Corn	w/ Soy	w/ SW
Ycot	1100	lbs	
TCcot	\$ 631.00	per acre	
NRcorn	\$ 108.00	per acre	
NRsoy	\$ 157.00	per acre	
NRsw	\$ 189.00	per acre	



# Comparison of Delta Cotton with Alternative Delta Crops

What price of cotton (market+LDP) is necessary to break-even with corn, soybeans, or soybean-wheat rotation? (As of early Tuesday morning with \$4.10/bu for Dec07 corn and \$8.17/bu for Nov07 soybeans.)

		Cotton	
	<u>Per Acre</u>	<u>Breakeven</u>	
N. R. corn	\$309.50	<b>\$0.86</b>	to BE with corn
N. R. soy	\$252.50	<b>\$0.80</b>	to BE with soybeans



## **Breakeven Prices: Examples from Texas Gulf Coast**

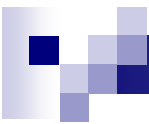
<b>Crop</b>	<b>To Cover Total Direct Costs</b>	<b>To Cover Total Specified Expenses</b>
<b>Grain Sorghum (Upper Coast)</b>	<b>\$2.79/cwt</b>	<b>\$3.36/cwt</b>
<b>Corn (Upper Coast)</b>	<b>\$1.62/bu</b>	<b>\$1.95/bu</b>
<b>Cotton (Upper Coast)</b>	<b>\$0.44/lb</b>	<b>\$0.48/lb</b>
<b>Grain Sorghum (Lower Coast)</b>	<b>\$3.10/cwt</b>	<b>\$3.91/cwt</b>
<b>Cotton (Lower Coast)</b>	<b>\$0.44/lb</b>	<b>\$0.47/lb</b>

***Point: Feedgrains look good (if feasible), but cotton is still viable. Implies marginal, but not wholesale, cotton declines***



# Break-even Prices: Southern High Plains Pivot Irrigated Example

Break-Even Prices for Texas SHP			
Projected for 2007			
Pivot Irrigated Cotton			
		Direct	Total
Yield	LBS	<u>Cost</u>	<u>Cost</u>
75%	825	\$0.648	\$0.795
90%	990	\$0.550	\$0.673
<b>100%</b>	<b>1100</b>	<b>\$0.501</b>	<b>\$0.611</b>
110%	1210	\$0.461	\$0.561
125%	1375	\$0.412	\$0.501
Irrigated Corn			
		Direct	Total
Yield	BU	<u>Cost</u>	<u>Cost</u>
75%	150.00	\$3.531	\$4.401
90%	180.00	\$2.986	\$3.711
<b>100%</b>	<b>200.00</b>	<b>\$2.713</b>	<b>\$3.366</b>
110%	220.00	\$2.490	\$3.083
125%	250.00	\$2.222	\$2.744



# Break-even Prices: Southern High Plains Drip Irrigated Example

Break-Even Prices for Texas SHP			
Projected for 2007			
Drip Irrigated Cotton			
		Direct	Total
Yield	LBS	<u>Cost</u>	<u>Cost</u>
75%	1125	\$0.536	\$0.689
90%	1350	\$0.457	\$0.584
<b>100%</b>	<b>1500</b>	<b>\$0.417</b>	<b>\$0.531</b>
110%	1650	\$0.385	\$0.489
125%	1875	\$0.346	\$0.437
Irrigated Corn			
		Direct	Total
Yield	BU	<u>Cost</u>	<u>Cost</u>
75%	150.00	\$3.531	\$4.401
90%	180.00	\$2.986	\$3.711
<b>100%</b>	<b>200.00</b>	<b>\$2.713</b>	<b>\$3.366</b>
110%	220.00	\$2.490	\$3.083
125%	250.00	\$2.222	\$2.744



# **2007 Acreage Implications**

- **Simple budget/breakeven analysis strongly favors corn, sorghum, soybeans, and wheat vs. cotton**
- **This result is tempered for operations with large fixed assets or integration, e.g., harvesters, gins, warehouses, oil mills, etc.**
- **Other constraints on southern grain production include availability of seed, storage, local markets, and grower familiarity**



# **MidSouth Implications**

- **MidSouth has the largest disparity between cotton and alternative revenues**
- **Feasibility of soybean production in MidSouth increases substitution possibilities compared to other regions**