

TEXAS-OKLAHOMA PRODUCER COTTON  
MARKET SUMMARY: 2003/2004

Mohamadou Fadiga, Sukant Misra, and Don Ethridge

Cotton Economic Research Institute  
Department of Agricultural and Applied Economics  
College of Agricultural Sciences and Natural Resources  
Texas Tech University

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The authors are Post Doctoral Research Associate, Professor, and Professor, respectively, Department of Agricultural and Applied Economics, Texas Tech University. The authors acknowledge Plains Cotton Cooperative Association and DTN Cotnet for cooperation in obtaining the data, and Phil Johnson and Jeff Johnson for valuable comments and suggestions.

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## **Abstract**

The analysis of the West Texas and East Texas/Oklahoma spot market using the Daily Price Estimation System (DPES) indicated an overall increase in quality in the 2003/04 marketing year. The results also indicated an overall price increase compared to the last four years, averaging 63.68 cents a pound. The combined total bales and total sales between the two regions were lower in 2003/04, with most of the decrease due to lower sales in West Texas. Total sales in East Texas/Oklahoma did not change much and total bales were 15 percent higher than their 2002/03 level. For the 2003/04 marketing year, the results indicated lower premiums for low leaf grade and higher premiums for higher staple length, color grade, and higher level of strength. However, premium levels for better than base quality first digit color grade appear to be minimal. Price discounts in 2003/04 for staple length, first and second digit color grade, strength, and uniformity either remained unchanged or decreased, while discounts for leaf, micronaire, and bark increased compared to the 2002/03 levels.

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## **TEXAS-OKLAHOMA PRODUCER COTTON MARKET: 2003/04**

### **Introduction**

This report summarizes the price, premium, and discount estimates for the 2003/04 marketing year (August 1, 2003 to July 31, 2004) based on spot market transactions throughout the West Texas and East Texas/Oklahoma regions. The estimates are derived on a daily basis using the Daily Price Estimation System (DPES), which is a computerized price analysis system that combines statistical estimation and spreadsheet computation to estimate the relationship between spot price in these two regions with a set of nine cotton quality attributes as defined by the USDA. The purpose of the analysis is to determine the base price and calculate the premiums and/or discounts associated with each attribute. These attributes include fiber length, fiber strength, fiber length uniformity, micronaire, leaf content, color grade, bark content, other extraneous matter content, and preparation (USDA, 1995). A detailed description of the model and the weighted averages of the parameter estimates are presented in Appendix A of this report. The report is organized as follows: the first section presents the 2003/04 crop statistics; the second section summarizes and discusses the average price, premiums, and discounts for the 2003/04 marketing year; and the last section discusses the movements of premiums and discounts associated with each characteristic.

### **2003/04 Crop Statistics**

The average cotton spot price for the 2003/04 marketing year was 63.68 cents a pound, about 35 percent higher than its 2002/03 level. The total number of bales per sale also increased from 92.17 to 96.38 bales per sale, but remained below its 2000/01 level of 215 bales per sale (Table 1). Data gathered during the 2003/04 marketing year included a

total of 531,844 bales in 5,518 transactions. The West Texas region accounted for 82.5 percent of the transactions and 79 percent of the volume of sales. As Figure 1 indicates, most of the transactions in the 2003/04 marketing year occurred between mid-December and the end of January. During that period prices averaged 65 cents a pound; 5 cents above the period after January 27 and 1.5 cents below the period between August 29 and December 17. The base prices in the two regions exhibited similar behavior during the 2003/04 marketing year, averaging about 64.4 cents a pound. As Figure 2 indicates, the movement of the base price in West Texas shows three different patterns in 2003/04. At the beginning of the marketing year, August 29 to mid-September, the base price fluctuated between 43 and 53 cents a pound; then increased to 78 cents a pound in mid-October; and stabilized between 63 and 68 cents a pound between November and the end of the marketing year.

With regard to quality attributes during the 2003/04 marketing year, the average leaf grade decreased to 2.78 compared to 3.80 in 2002/03 (Table 1). The first and second digit color grade also decreased substantially compared to the previous marketing year. There was a slight increase in staple length (34.03 vs. 33.29 32nds/inch) and strength (28.96 vs. 28.32 gram/tex). Micronaire and uniformity increased slightly (4.35 vs. 4.33 and 80.82 vs. 80.77, respectively) between the two marketing years. Average level 1 bark and level 1 other extraneous matter decreased, while level 1 preparation increased in 2003/04. Overall the crop in the 2003/04 marketing year was of better quality, which may help partially explain higher prices observed this year.

Table 1. Texas-Oklahoma Crop Statistics Averages from DPES, by Marketing Year

Attribute	2003/04	2002/03	2001/02	2000/01
Price (Cents/lb.)	63.68	41.98	26.24	50.90
Bales per Sale	96.38	92.17	73.00	215.00
Leaf Grade	2.78	3.80	2.90	3.35
First Digit of				
Color Grade	2.41	3.36	2.52	3.03
Second Digit of				
Color Grade	1.08	1.23	1.35	1.38
Staple	34.03	33.29	33.5	32.58
Strength	28.96	28.32	28.31	27.00
Micronaire	4.35	4.33	4.41	3.87
Uniformity	80.82	80.77	80.88	80.11
Level 1 Bark (%)	5.17	18.75	9.55	0.30
Level 2 Bark (%)	0.00	0.00	0.00	0.00
Level 1 Other (%)	0.13	0.23	0.02	0.00
Level 2 Other (%)	0.00	0.01	0.00	0.00
Preparation 1 (%)	0.20	0.01	0.05	0.00
Preparation 2 (%)	0.00	0.00	0.00	0.00

Number of Sales

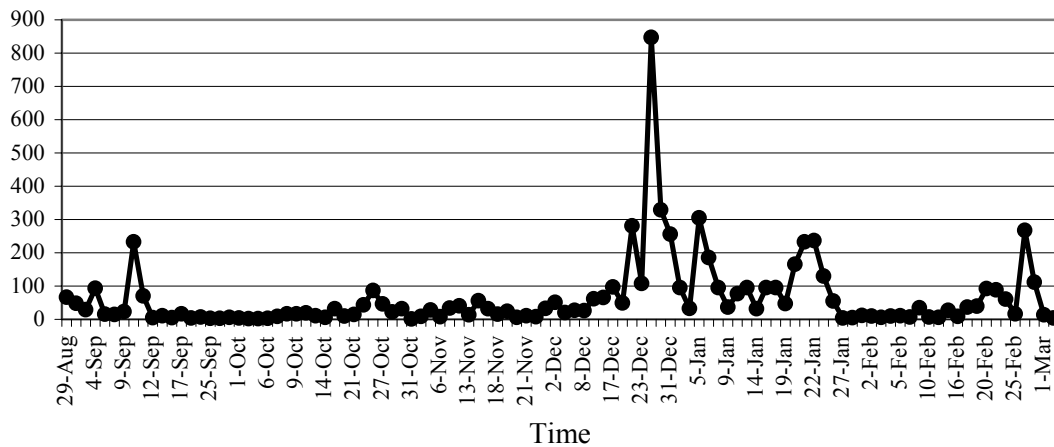


Figure 1. Daily Volume of Transactions for the 2003/04 Marketing Year.



Base Price (Cents/lb.)

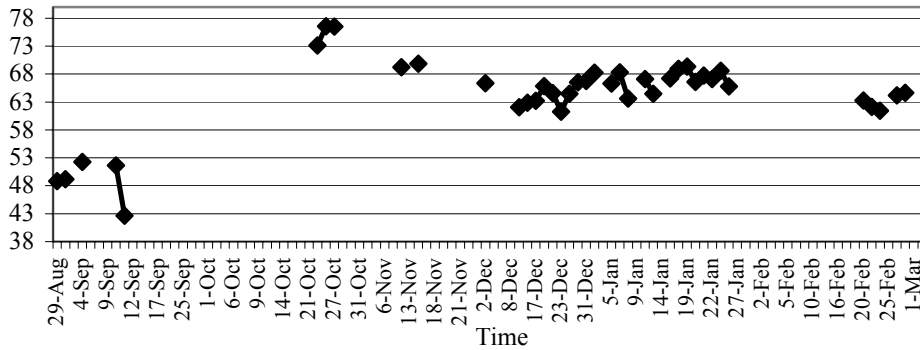


Figure 2. Movement of Base Prices for the 2003/04 Marketing Year, West Texas.

**Average 2003/04 Prices, Premiums, and Discounts**

The DPES uses a hedonic model to estimate the relationship between spot price and a set of nine quality attributes and a regional variable to separate West Texas and East Texas/Oklahoma regions. The goal of this estimation is to calculate the daily premiums and discounts associated with each characteristic. The results of this estimation are then used to calculate the weighted average of the parameters for the entire marketing year and to calculate the yearly base prices, premiums, and discounts in the two regions. Table 2 presents these results for the West Texas region, which are very similar to the East Texas/Oklahoma region.

Table 2. West Texas Yearly Weighted Averages Price Estimates from DPES 2003/04

# Sales: 4361  
# Bales: 439175

Color Grade	Staple Length										
	28	29	30	31	32	33	34	35	36	37	38
11	-594	-500	-401	-297	-187	-72	50	177	311	452	600
21	-631	-538	-439	-335	-226	-111	9	136	269	409	555
31	-653	-560	-462	-358	-250	-135	0	111	244	383	529
41	-716	-624	-527	-425	-317	-204	64.42	39	171	308	453
51	-838	-748	-653	-553	-447	-337	-221	-98	30	165	306
61	-1116	-1031	-940	-845	-745	-640	-529	-413	-291	-163	-29
71	-1478	-1398	-1314	-1225	-1132	-1034	-931	-823	-709	-590	-464
12	-736	-644	-547	-445	-338	-225	-107	17	148	285	429
22	-736	-644	-547	-445	-338	-225	-107	17	148	285	429
32	-764	-673	-576	-475	-368	-256	-138	-14	116	252	395
42	-804	-714	-618	-517	-411	-300	-183	-60	69	205	347
52	-980	-892	-800	-702	-600	-492	-379	-259	-134	-3	135
62	-1239	-1156	-1067	-975	-877	-774	-666	-553	-434	-309	-177
23	-930	-841	-748	-649	-546	-437	-323	-202	-76	56	196
33	-930	-841	-748	-649	-546	-437	-323	-202	-76	56	196
43	-1006	-918	-826	-729	-627	-520	-407	-289	-164	-33	104
53	-1063	-976	-885	-789	-688	-582	-470	-353	-229	-100	36
63	-1542	-1463	-1380	-1293	-1201	-1104	-1002	-896	-783	-666	-542
34	-1214	-1130	-1041	-948	-849	-746	-638	-524	-404	-278	-146
44	-1517	-1438	-1354	-1266	-1174	-1076	-974	-867	-754	-636	-511
54	-1647	-1570	-1488	-1403	-1313	-1218	-1118	-1014	-904	-789	-668

Micronaire Differences	Leaf Grade Differences		Uniformity Differences		Strength Differences		
Mike Range	Disc	Prem./	Disc./	Disc./	Disc./	Grams/Tex.	Disc./
<24	Leaf Grade	Disc.	Uniformity	Prem	Prem		Prem
25 – 26	-787	1	88	<77	-2	<18	-205
27 – 29	-576	2	88	78	-2	19	-177
30 – 32	-362	3	75	79	-1	20	-149
33 – 34	-218	4	0	80	-1	21	-124
35 – 49	0	5	-134	81	0	22	-100
50 – 52	-247	6	-323	82	1	23	-78
>53	-365	7	-563	83	1	24	-58
	Level 1	Level 2		84	--	25	-39
Bark	-359	-359		85	--	26	-22
Preparation	-1499	-1499		>86	--	27-28	0
Other Ext. Matter	-944	-944				29	18
						30	28
						31-32	39
						>33	47

All Premiums and discounts are expressed in points/lb.

### Patterns of Premiums and Discounts

This section summarizes the average premiums and discounts for each quality attribute during the 2003/04 marketing year. It also provides a comparison of the 2003/04 and 2002/03 marketing years to identify whether there were changes in premiums and discounts of each quality attribute. Because of the similarity between the West Texas and East Texas/Oklahoma regions, only the former is presented.

#### *Leaf Grade*

For illustration purposes, the premiums for leaf grade 3 for West Texas are presented in Figure 3. Leaf grade 3 premiums from October 23 to the end of the 2003/04 marketing year indicate most of the daily premiums were between 50 and 150 points/lb. Leaf grade premiums and discounts for the West Texas market in the 2003/04 marketing year were compared with the 2002/03 marketing year (Figure 4). The results show that premiums for low leaf grade were lower and discounts for high leaf grade were higher in the 2003/04 marketing year.

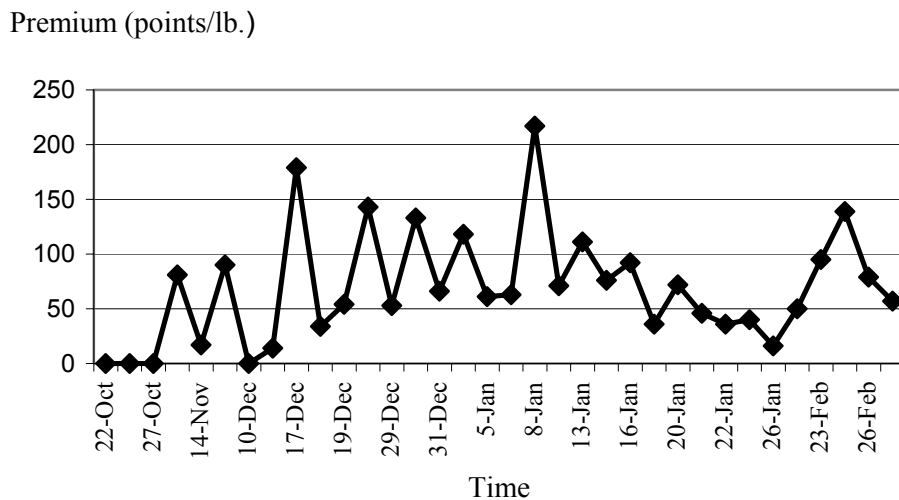


Figure 3. Leaf Grade 3 Premiums for the 2003/04 Marketing Year, West Texas.

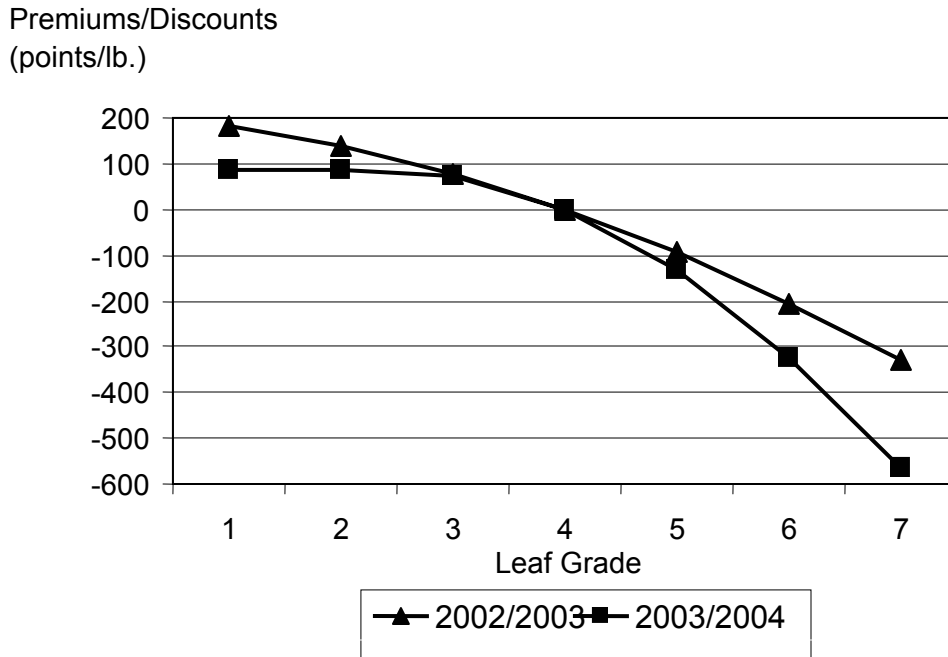


Figure 4. Leaf grade Premiums/Discounts, 2003/04 and 2002/03 Marketing Years, West Texas.

*Color Grade*

Although the discounts for color grade 42 fluctuated considerably between October 23 and February 27, most of the daily discounts were between 200 and 400 points/lb. (Figure 5). Color grade 1 received a slight premium, but similar to the 2002/03 marketing year, color grades 2 and 3 did not receive any premiums in the 2003/04 marketing year. The discounts for color grade 5 and 6 in the 2003/04 also appear to be very similar to 2002/03 (Figure 6). Discounts for the second digit color grade were lower in the 2003/04 marketing year. Thus, increased levels of yellowness were less severely discounted in the 2003/04 marketing year than the previous year (Figure 7).

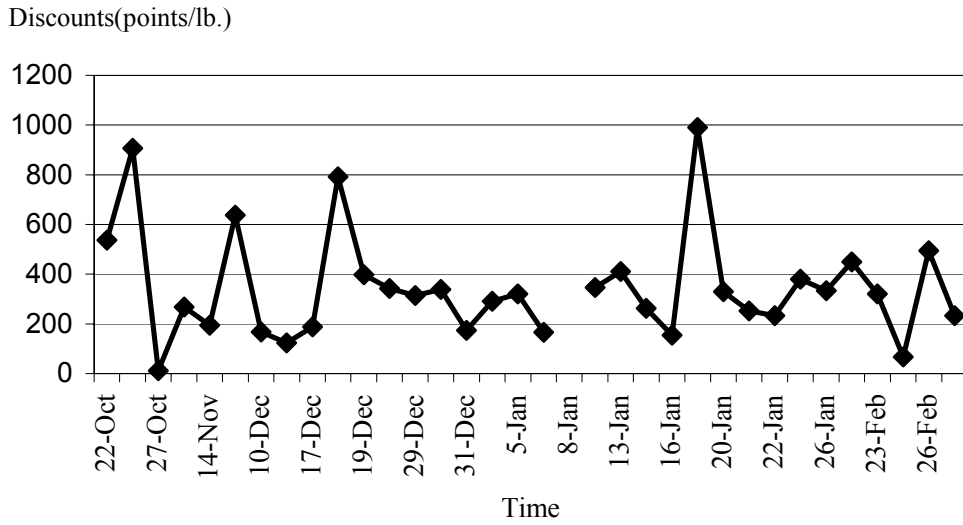


Figure 5. Color Grade 42 Discounts for the 2003/04 Marketing Year, West Texas.

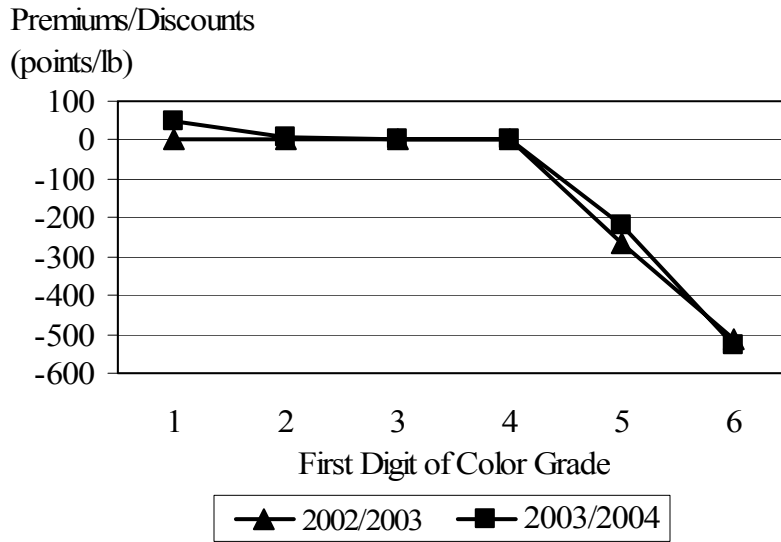


Figure 6. First Digit of the Color Grade Premiums/Discounts for 2003/04 and 2002/03 Marketing Years, West Texas.

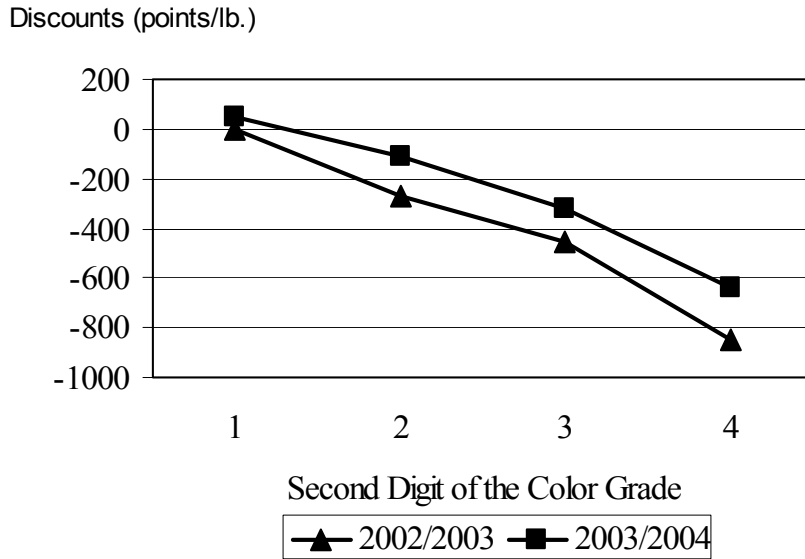


Figure 7. Second Digit of the Color Grade Discounts for 2003/04 and 2002/03 Marketing Years, West Texas.

*Staple*

The discounts for staple length 33 for the 2003/04 marketing year were relatively stable around 300 points/lb despite some occasional spikes (Figure 8). In regards to premiums and discounts, lower staple length levels (below the base) were less discounted in 2003/04 than in 2002/03, while higher levels received slightly higher premiums compared to the previous crop year (Figure 9).

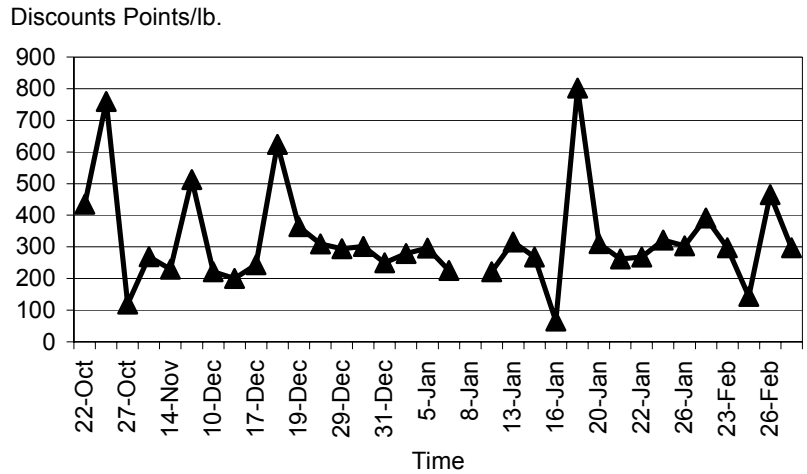


Figure 8. Staple Length 33 Discounts for the 2003/04 Marketing Year, West Texas

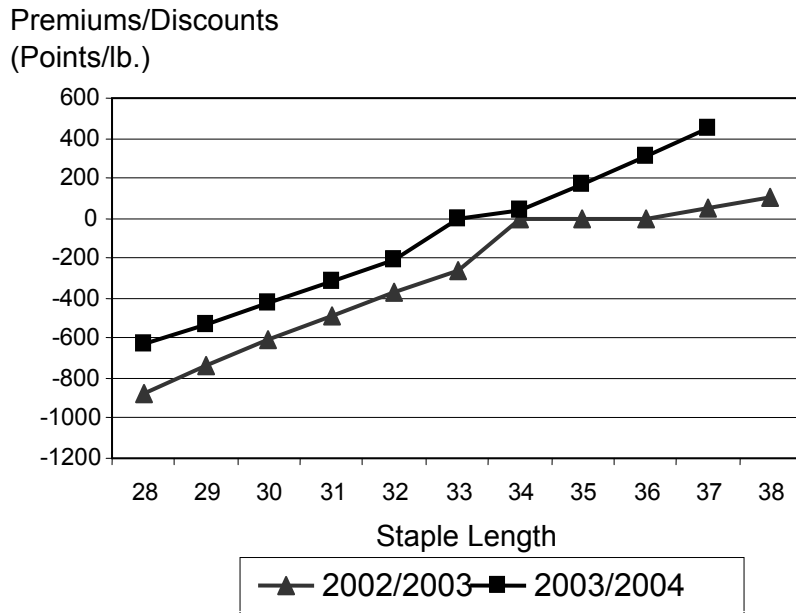


Figure 9. Staple Length Premiums/Discounts for 2003/04 and 2002/03 Marketing Years, West Texas.

*Strength*

As illustrated in Figure 10, strength 26 discounts fluctuated between 0 and 80 points/lb. Compared to the 2002/03 marketing year, lower strength levels (below 27-28 gram/tex.) were less severely discounted in 2003/04 (Figure 11). Unlike the previous marketing year, higher levels of strength received some premiums in the 2003/04 marketing year (Figure 11). This is a clear departure from the trend of low to no premiums for strength first observed in 2001.

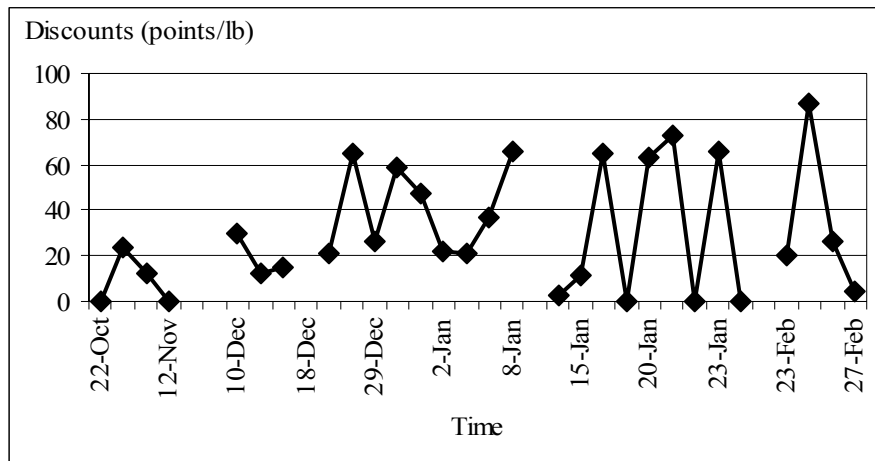


Figure 10. Strength 26 Discounts for the 2003/04 Marketing Year, West Texas



## Premiums/Discounts

(points/lb.)

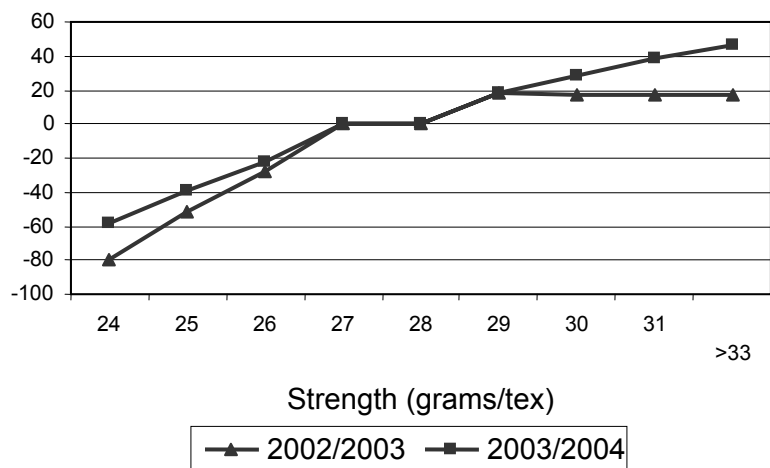


Figure 11. Strength Premiums/Discounts for 2003/04 and 2002/03 Marketing Years, West Texas.

### *Micronaire*

Discounts for micronaire 3.35 exhibited two distinct patterns in the 2003/04 marketing year, which for the most part fluctuated between 100 and 250 points/lb. (Figure 12).

Discounts for micronaire 3.35 trended downward from 250 to 100 points/lb in December and then steadily increased to reach 300 points near the end of the marketing year.

Compared to the 2002/03 marketing year, micronaire was more severely discounted both above and below the base level (Figure 13).

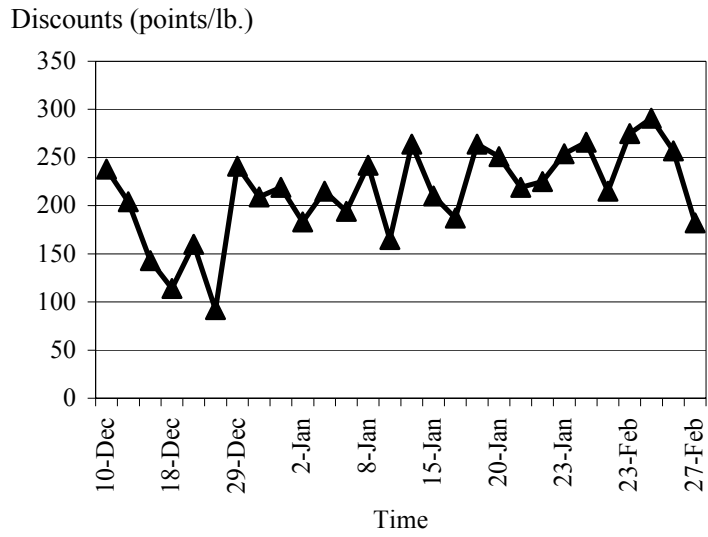


Figure 12. Micronaire Discounts 3.35 for the 2003/04 Marketing Year, West Texas

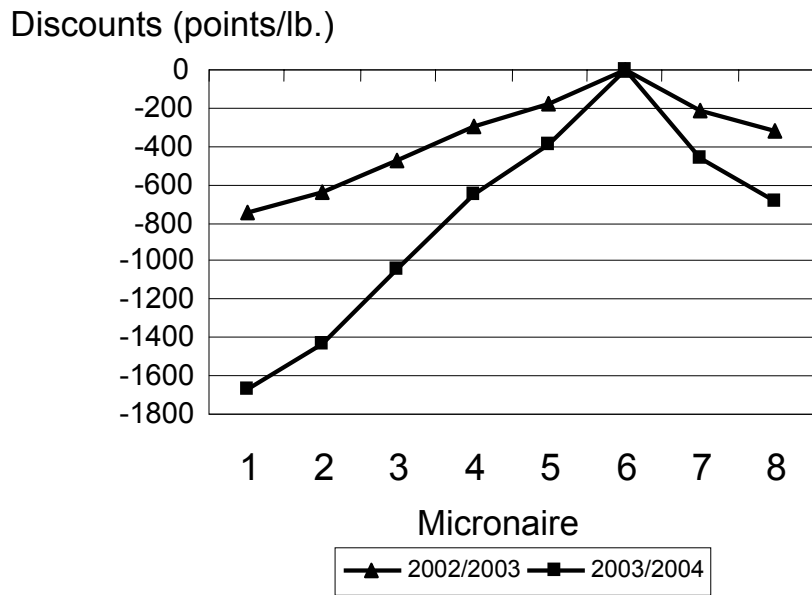


Figure 13. Micronaire Discounts, 2003/04 and 2002/03 Marketing Years, West Texas.

*Bark*

Discounts for level 1 bark remained relatively stable in the 2003/04 marketing year, fluctuating for the most part between 0 and 500 points/lb. (Figure 14). Discounts for level 1 bark in 2003/04 were on average 150 points higher than in 2002/03 (Figure 15). This is probably because most cotton lots had very little bark.

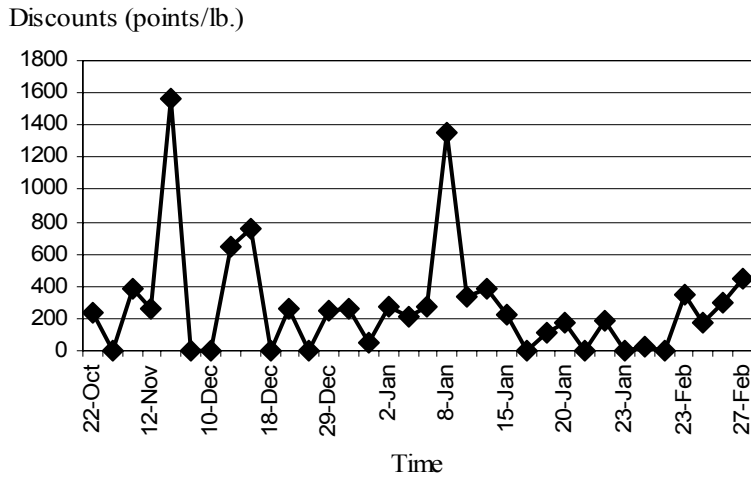


Figure 14. Level 1 Bark Discounts for the 2003/04 Marketing Year, West Texas.

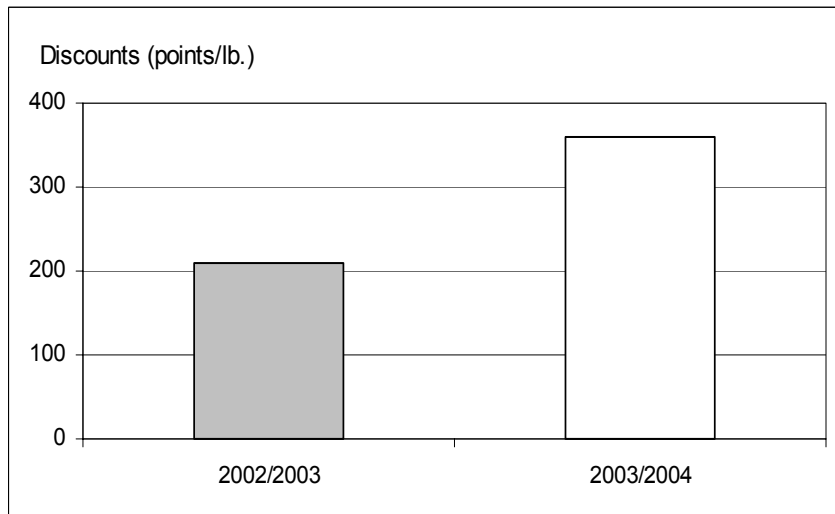


Figure 15. Bark Discounts for the 2003/04 and 2002/03 Marketing Years, West Texas

*Uniformity*

Although discounts for uniformity 80 were somewhat erratic in the 2003/04 marketing year, uniformity discounts were minimal, fluctuating between 0 and 45 points/lb. (Figure 16). Throughout the month of December, uniformity 80 was not discounted. After the spike in early January the discounts for uniformity 80 generally followed a downward trend. Overall, it appears that uniformity had a relatively small effect on cotton price in West Texas in the 2003/04 marketing year.

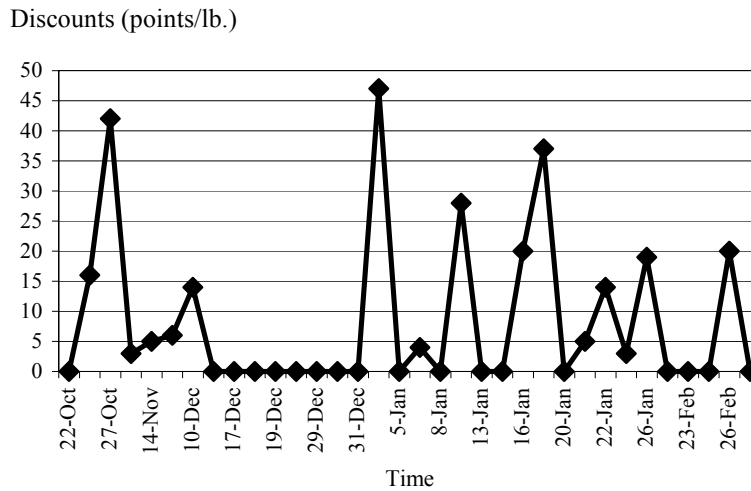


Figure 16. Uniformity 80 Discounts for the 2003/04 Marketing year, West Texas.

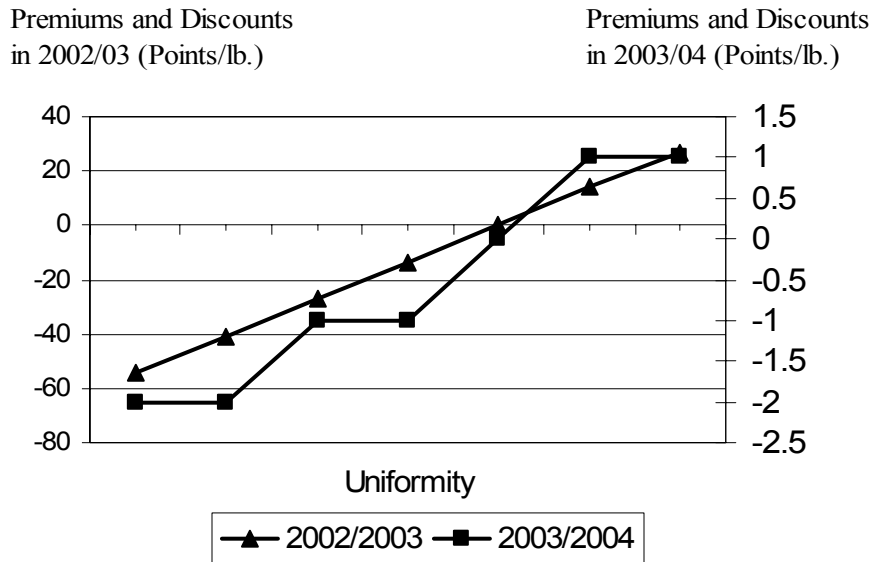


Figure 17. Uniformity Discounts for the 2002/03 and 2003/04 Marketing Years, West Texas.

*Other Extraneous Matter and Preparation*

As stated earlier, the percentage of level 1 and level 2 of other extraneous matter and preparation remain below the 1 percent level in the 2003/04 marketing year. The low incidence of other extraneous matter and preparation makes it difficult to interpret and draw conclusions on the patterns of these attributes.

**Summary**

The analysis of the 2003/04 marketing year shows that prices increased and were at their highest level in the last four years, averaging 63.68 cents a pound. Total bales and total sales for the West Texas region declined compared to last year. Although total sales for the East Texas/Oklahoma region remained unchanged, total bales for the region increased to 90,620 bales, about 15 percent higher than its 2002/03 level. The higher prices were likely influenced by an increased level of overall quality in addition to supply

and demand factors. For the 2003/04 marketing year, the results indicated lower premiums for low leaf grade and uniformity and higher premiums for higher staple length, color grade, and higher level of strength. However, premium levels for better than base quality strength and the first digit color grades appear to be minimal. Price discounts in 2003/04 for staple length, first and second digit color grade, strength, and uniformity either remained unchanged or decreased, while discounts for leaf, micronaire, and bark increased compared to the 2002/03 levels.

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## Appendix A

### The DPES Model and Yearly Parameter Estimates

The Daily Price Estimation System is a computerized econometric model based on the theory of hedonic price analysis (Brown and Ethridge, 1995). The premise of this approach is that the value of a commodity is determined by the value of the utility bearing characteristics that comprise the commodity. The implicit prices of these characteristics may be determined by disaggregating the price of the commodity into its measurable characteristic components. In the DPES, the relationship between the price of cotton and its various measurable quality attributes is estimated using a nonlinear regression model. The equation used for regression analysis is:

$$P = \exp \left( \begin{array}{l} \beta_0 + \beta_1 LF + \beta_2 LF^2 + \beta_3 RD + \beta_4 RD^2 + \beta_5 PB + \beta_6 UNI + \beta_7 STA + \\ \beta_8 STA^2 + \beta_9 STR + \beta_{10} STR^2 + \beta_{11} M + \beta_{12} M^2 + \beta_{13} LB + \beta_{14} LB^2 \\ + \beta_{15} HB + \beta_{16} LO + \beta_{17} HO + \beta_{18} PRA + \beta_{19} PRB + \beta_{20} R \end{array} \right)$$

The variable definitions and parameter estimates are presented in Appendix Table A1. At the end of each marketing year, the data for that year are compiled and diagnostic tests are run on the model. The purpose of running diagnostics tests is to detect any systematic error that might have occurred in the DPES, but which remained undetected in the daily diagnostics. The model specification above is the result of the year-end diagnostic analysis for the 2003/04 marketing year. The procedures of Brown et al. (1995) indicated that this model specification best fits the 2003/04 marketing year data. The parameters of the model for the 2003/04 year model were computed by weighting the individual estimates for each day by the number of sales transactions during that day.

Appendix Table A1: Definition of Variables and Parameter Estimates for the 2003/04

Marketing Year Model. Dependent Variable = Log(Price)

Definition of the Variables	Variables	Parameters	Estimates
Constant term		$\beta_0$	1.07933
Average leaf grade (1 to 7)	LF	$\beta_1$	0.02157
Average leaf grade squared	LF2	$\beta_2$	-0.00473
Average first digit color grade (1 through 7)	RD	$\beta_3$	0.03907
Average first digit color grade squared	RD2	$\beta_4$	-0.00023
Average second digit color grade (1 through 4)	PB	$\beta_5$	0.02664
Average second digit color grade squared	PB2	$\beta_6$	-0.00176
Average staple length (32nds of an inch)	STA	$\beta_7$	-0.00056
Average staple length squared	STA2	$\beta_8$	0.00029
Average micronaire reading	M	$\beta_9$	0.40286
Average micronaire reading squared	M2	$\beta_{10}$	-0.04799
Average strength (gram/tex)	STR	$\beta_{11}$	0.00978
Average strength squared	STR2	$\beta_{12}$	-0.00014
Percentage uniformity length	UNI	$\beta_{13}$	0.00008
Percentage of bales classed as level 1 bark	LB	$\beta_{14}$	-0.02449
Percentage of bales classed as level 1 bark squared	LB2	$\beta_{15}$	-0.03291
Percentage of bales classed as level 2 bark	HB	$\beta_{16}$	-0.03441
Percentage of bales classed as level 1 other extraneous matter	LO	$\beta_{17}$	-0.26494
Percentage of bales classed as level 2 other extraneous matter	HO	$\beta_{18}$	-0.05189
Percentage of bales classed as level 1 preparation	PRA	$\beta_{19}$	-0.15853
Percentage of bales classed as level 2 preparation	PRB	$\beta_{20}$	-0.0229
Region (R = 0 for West Texas, R = 1 for East Texas and Oklahoma)	R	$\beta_{21}$	-0.00021