TEXAS-OKLAHOMA PRODUCER COTTON MARKET SUMMARY: 2002/2003

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CER-03-04

September 2003

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This research is supported by Cotton Incorporated and the Texas State Support Committee.

Abstract

The volume of the Texas-Oklahoma spot cotton market analyzed by the Daily Price Estimation System (DPES) for the 2002/03 marketing year increased from 364,267 bales the previous year to 606,661 bales this year. The average price received by producers during the 2002/03 marketing year was 41.98 cents/lb, which is about 16 cents/lb. higher than the previous year. The 2002 crop was generally of good quality. The average micronaire level was slightly lower in 2002 at 4.33, and the average number of bales having level 1 bark was up in comparison to the 2002 crop. With the exception of strength and micronaire, price discounts for the 2002 crop increased for all quality attributes. Premiums remained about the same for all quality attributes with the exception of leaf. The premiums for lower levels of leaf in the 2002-03 market year showed a relative increase. In regard to strength, the first digit of the color grade, and staple length, producers did not appear to receive much of a premium for better than base qualities.

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TEXAS-OKLAHOMA PRODUCER COTTON MARKET SUMMARY: 2002/2003

Introduction

This report summarizes the price, premium, and discount estimates for the 2002/03 marketing year (also referred to as the 2002 crop year). These estimates were obtained from the Daily Price Estimation System (DPES), which is maintained and operated by the Cotton Economics Research Institute, Department of Agricultural and Applied Economics, Texas Tech University. The DPES is a computerized price analysis system that uses an econometric model to analyze producer cotton prices and estimate quality premiums and discounts for the West Texas and East Texas/Oklahoma cotton marketing regions on a daily basis (Brown et al. 1995). The DPES receives data each day from electronic spot markets operating in these regions and uses these data for daily price analysis and estimation of premiums and discounts. These data represent only producer spot market transactions, and do not include contracted cotton, commission sales to mills, or sales among merchants. The reported results are based on the official HVI grading standards used by the U.S. Dept. of Agriculture.

2002/2003 Crop Statistics

Table 1 provides a summary of the crop in terms of simple averages for the 2002/03 marketing year and comparisons with the previous three years of crop performance (Nelson et al. 2000, Ward et al. 2001, Sanders et al.2002). For the 2002/03 marketing year, a total of 606,661 bales (530,065 bales from West Texas and 76,596 bales from East Texas/Oklahoma) and 6,582 sales transactions were used in the DPES estimations.

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

Attribute	2002/2003	2001/2002	2000/2001	1999/2000
Price (cents/Lb.)	41.98	26.3	50.9	37.82
Bales per Sale	92.169	73	215	74
Leaf Grade	3.8	2.9	3.35	2.74
First Digit of Color Grade	3.36	2.52	3.03	2.37
Second Digit of Color Grade	1.23	1.35	1.38	1.19
Staple	33.29	33.5	32.58	32.58
Strength	28.82	28.31	27	27.62
Micronaire	4.33	4.41	3.87	4.17
Uniformity	80.77	80.88	80.11	--
Level 1 Bark (%)	18.75	9.55	0.3	6.03
Level 2 Bark (%)	0	0	0	0.02
Level 1 Other (%)	0.23	0.2	0.002	0.6
Level 2 Other (%)	0.01	0	0	0.03
Preparation 1	0.01	0.05	0	--
Preparation 2	0	0	0	--

The number of sale transactions and bales sold received by the DPES for the 2002 crop year increased by about 67% from the previous year. This higher volume could be attributed to the number of bales held over from the previous year. The number of bales per sale increased from 73 bales in 2001/02 to 92 bales in 2002/03 (Table 1).

The 2002 crop was characterized by a slightly longer marketing season, running from the beginning of October to the end of March. Figure 1 illustrates the pattern of sale

transactions during the 2002/2003 marketing year. After March 13, sales dropped off sharply and for the remainder of the marketing period there was little to no market activity. The average price received by producers increased to 41.98 cents/lb. The price for the 2002 crop year started out at a lower level and increased throughout the season with the exception of a few days where lower prices were observed (Figure 2). In the previous year, the base price was at its lowest level during the first part of the season, then increased marginally towards the end of October and remained fairly stable during the remainder of the marketing year.

The average leaf grade increased from 2.9 in 2001/02 to 3.8 in 2002/03 (Table 1). The first digit of the color grade, indicating the degree of reflectance, declined to an average of 3.36 compared to last year's value of 2.52. The second digit of the color grade, indicating the degree of yellowness, improved slightly from 1.35 in 2001 to 1.23 for the 2002 crop year.

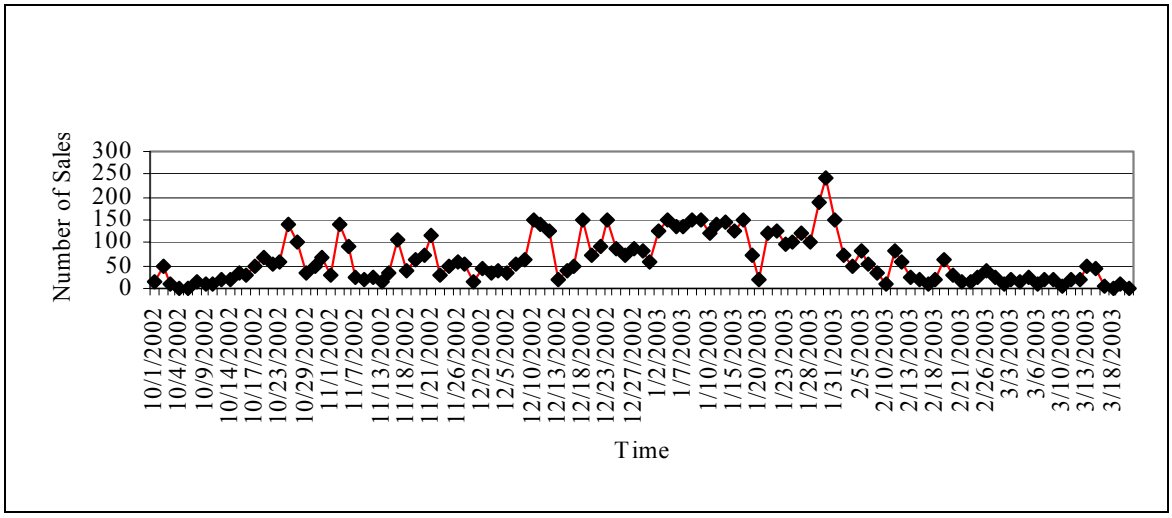

Figure 1: Daily Volume of Transactions for the 2002/03 Marketing Year.

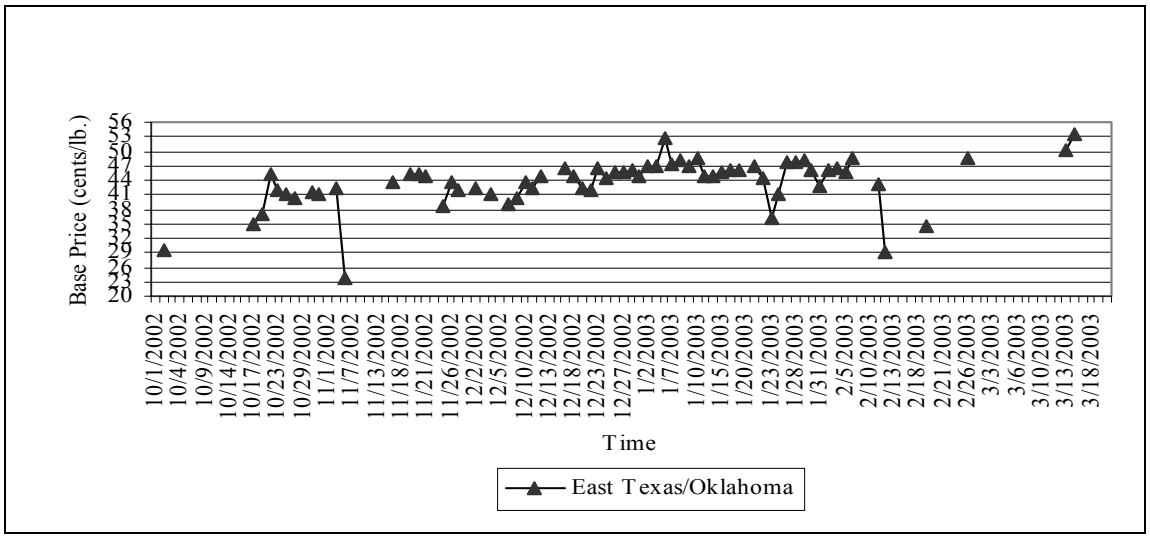

Figure 2: Movement of Base Prices for the 2002/03 Marketing Year, West Texas.

The average staple length declined slightly from 33.5 32nds/inch in the 2001 crop year to 33.29 in the 2002 crop. Average strength increased from 28.31 grams/tex. to 28.82 grams/tex. Micronaire decreased slightly from 4.41 in 2001/02 to 4.33 in 2002/03.

Bark is reported as the percentage of bales having level 1 or 2 bark. Average level 1 bark increased from 9.55% to 18.75% and transactions with level 2 bark in 2002 remained insignificant. Other extraneous matters is reported as the percentage of bales in a lot containing either level 1 or level 2 other extraneous matter (largely grass content). Average level 1 and 2 other extraneous matter observed in 2002 were low with level 1 at .23% and level 2 at .01%. The incidence of level 1 preparation (reported as the percentage of bales) was observed at a limited level of .01%, while level 2 preparation was not observed.

Average 2002/2003 Prices, Premiums, and Discounts

The DPES utilizes an econometric model to disaggregate the price of cotton with respect to nine quality characteristics: leaf grade, color grade, staple length, strength, micronaire, uniformity, bark content, preparation, and other extraneous matter content. These are the same quality characteristics used by the USDA for the classification and grading of U.S. cotton through the 2002/03 marketing year. Parameter estimates obtained from the econometric model are used to calculate the daily premiums and discounts. Appendix A contains a more detailed discussion of the econometric procedures utilized.

A set of parameter estimates (see Appendix A), representing a weighted average of the estimates for the entire crop year, was used to calculate the premiums and discounts for the 2002/03 marketing year for the West Texas (Table 2) and East Texas/Oklahoma (Table 3) regions. The upper half of the table presents the color grade/staple matrix containing the discounts and premiums for color grade and staple length, and with base price at color grade 41 and staple length 34 (all other quality attributes held at the base levels). For example, the average base price for the West Texas region was 44.31 cents/lb. (100 points = 1 cent). For a color grade of 51 and staple length 33, the discount with respect to that base price was about 3.60 cents/lb. The bottom half of the table presents the average discounts for micronaire, bark, preparation and other extraneous matter content, and the premiums and discounts for strength and leaf grade.

Table 2. 2002/2003 Weighted Average Price Estimates From the DPES, West Texas

Yearly Weighted Average from the Daily Spto Cotton Price Estimates

Dept. of Ag. And Applied Econ., Texas Tech Univ. # Sales: 5417

Date: 2002 Year Region: West Texas # Bales: 530065

Color Grade and Staple Premiums and Discounts in Points/lb.[a]

	Staple Length										
Col Grade	28	29	30	31	32	33	34	35	36	37	38
11	-820	-682	-549	-424	-307	-200	0	0	59	121	171
21	-833	-695	-563	-439	-322	-215	0	0	43	105	154
31	-835	-697	-565	-441	-324	-217	0	0	41	103	152
41	-874	-737	-607	-484	-369	-263	44.31[b]	0	0	54	103
51	-956	-823	-696	-575	-463	-360	-266	-183	-111	-50	-3
61	-1163	-1038	-918	-805	-699	-602	-513	-435	-367	-311	-266
71	-1433	-1318	-1208	-1104	-1007	-918	-837	-765	-703	-651	-610
12	-903	-767	-638	-516	-402	-297	-202	-117	-44	17	66
22	-905	-769	-640	-518	-404	-299	-204	-119	-46	15	63
32	-927	-793	-664	-543	-430	-325	-231	-147	-74	-14	35
42	-957	-823	-696	-576	-463	-360	-266	-183	-111	-51	-3
52	-1102	-975	-853	-737	-630	-530	-441	-361	-292	-234	-188
62	-1317	-1198	-1084	-976	-875	-783	-698	-624	-559	-505	-463
23	-1024	-894	-769	-651	-541	-439	-347	-266	-195	-136	-89
33	-1042	-912	-788	-671	-561	-460	-369	-288	-217	-159	-112
43	-1112	-984	-862	-747	-640	-541	-452	-372	-303	-246	-200
53	-1174	-1049	-930	-817	-711	-614	-526	-448	-381	-325	-280
63	-1592	-1483	-1379	-1280	-1189	-1104	-1027	-959	-901	-851	-812
34	-1212	-1088	-970	-859	-755	-659	-572	-495	-428	-372	-328
44	-1444	-1330	-1220	-1117	-1020	-931	-851	-779	-717	-666	-625
54	-1619	-1511	-1408	-1311	-1220	-1136	-1060	-993	-935	-886	-847

Micronaire Differences

Mike Range	Disc
<24	-757
25 - 26	-644
27 - 29	-471
30 - 32	-295
33 - 34	-176
35 - 49	0
50 - 52	-218
>53	-319

	Level 1	Level 2
Bark	-209	--
Preparation	--	--
Other Ext. Matter	-1305	-1305

Leaf Grade Differences

Leaf Grade	Prem./ Disc.
1	182
2	139
3	78
4	0
5	-95
6	-206
7	-330

Uniformity Differences

Uniformity	Disc./ Prem
<77	-54
78	-41
79	-27
80	-14
81	0
82	14
83	27
84	--
85	--
>86	--

Strength Differences

Grams/Tex.	Disc./ Prem
<18	--
19	--
20	--
21	--
22	-148
23	-112
24	-80
25	-52
26	-28
27 - 28	0
29	18
30	17
31 - 32	17
>33	17

a100points = 1 cent

[b]Base Price in Cents/lb.

Table 3. 2002/2003 Weighted Average Price Estimates From the DPES, East Texas/Oklahoma

Yearly Weighted Average from the Daily Spto Cotton Price Estimates

Dept. of Ag. And Applied Econ., Texas Tech Univ. # Sales: 1165

Date: 2002 Year Region: East Texas/Oklahoma # Bales: 76596

Color Grade and Staple Premiums and Discounts in Points/lb.[a]

	Staple Length										
Col Grade	28	29	30	31	32	33	34	35	36	37	38
11	-815	-678	-546	-422	-306	-199	0	0	59	121	170
21	-828	-691	-560	-436	-320	-214	0	0	42	104	154
31	-830	-693	-562	-438	-322	-216	0	0	40	102	151
41	-869	-733	-603	-481	-366	-261	44.05[b]	0	0	54	102
51	-951	-818	-692	-572	-460	-357	-264	-181	-110	-50	-3
61	-1156	-1031	-912	-800	-695	-598	-510	-432	-365	-309	-264
71	-1425	-1310	-1201	-1098	-1002	-913	-832	-761	-699	-648	-607
12	-898	-763	-634	-513	-399	-295	-200	-116	-44	17	65
22	-899	-765	-636	-515	-402	-297	-202	-118	-46	15	63
32	-922	-788	-661	-540	-427	-323	-229	-146	-74	-14	34
42	-951	-819	-692	-572	-461	-358	-264	-182	-110	-50	-3
52	-1096	-969	-848	-733	-626	-527	-438	-359	-290	-233	-187
62	-1310	-1191	-1077	-970	-870	-778	-694	-620	-556	-502	-460
23	-1018	-888	-764	-647	-537	-437	-345	-264	-194	-135	-89
33	-1036	-907	-784	-667	-558	-458	-367	-286	-216	-158	-111
43	-1105	-978	-857	-743	-636	-538	-449	-370	-302	-244	-199
53	-1167	-1043	-924	-812	-707	-611	-523	-446	-379	-323	-278
63	-1582	-1474	-1371	-1273	-1182	-1098	-1021	-954	-895	-846	-808
34	-1205	-1082	-965	-854	-750	-655	-569	-492	-426	-370	-326
44	-1436	-1322	-1213	-1110	-1014	-926	-846	-775	-713	-662	-621
54	-1610	-1503	-1400	-1303	-1213	-1130	-1054	-987	-929	-881	-842

Micronaire Differences

Mike Range	Disc
<24	-753
25 - 26	-640
27 - 29	-469
30 - 32	-293
33 - 34	-175
35 - 49	0
50 - 52	-217
>53	-317

	Level 1	Level 2
Bark	-208	--
Preparation	--	--
Other Ext. Matter	-1298	-1298

Leaf Grade Differences

Leaf Grade	Prem./ Disc.
1	181
2	139
3	78
4	0
5	-95
6	-204
7	-328

Uniformity Differences

Uniformity	Disc./ Prem
<77	-54
78	-41
79	-27
80	-14
81	0
82	14
83	27
84	--
85	--
>86	--

Strength Differences

Grams/Tex.	Disc./ Prem
<18	--
19	--
20	--
21	--
22	-147
23	-111
24	-79
25	-51
26	-28
27 - 28	0
29	18
30	17
31 - 32	17
>33	17

a100points = 1 cent

[b]Base Price in Cents/lb.

The zeros in the premium and discount columns for micronaire, leaf, uniformity, and strength represent the base quality as defined by USDA through the 2002/03 marketing year.

Patterns of Premiums and Discounts

The following section summarizes the average premiums and discounts for each fiber quality attribute observed throughout the 2002/03 marketing year. The movements of the premiums and discounts of each individual attribute throughout the marketing year are presented and analyzed. While a specific quality attribute is being discussed, all other attributes are held at their base level. Seasonal patterns and comparisons are illustrated using the quality attribute premiums and discounts of the West Texas marketing region, which are not appreciably different from those of the East Texas/Oklahoma region.

Leaf Grade

Figure 3 presents the leaf grade 3 premiums for the 2002/03 marketing year. The variation in premiums was similar to that in the previous marketing year, with the majority of premiums (illustrated with leaf grade 3) fluctuating between 50 and 150 points/lb. Figure 4 illustrates the average premiums and discounts associated with each leaf grade for the 2002/03 marketing year in comparison with the 2001/02 marketing year. Both the premiums for lower levels of leaf and discounts for high leaf levels in the 2002/03 marketing year showed a relative increase.

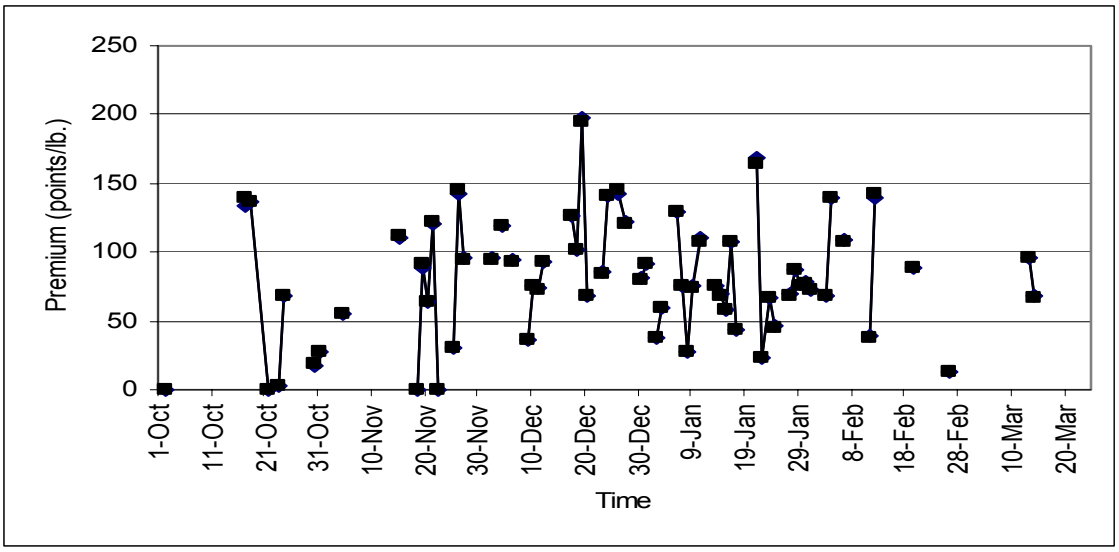

Figure 3: Leaf Grade 3 Premiums for the 2002/03 Marketing Year, West Texas.

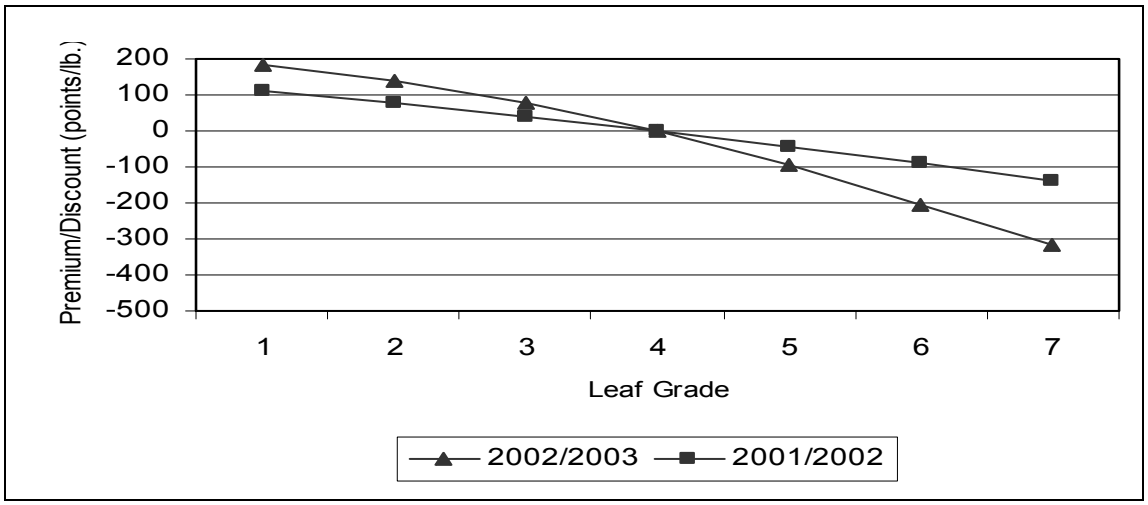

Figure 4: Leaf Grade Premiums/Discounts, 2002/03 and 2001/02, West Texas.

Color Grade

The discount for color grade 42 (Figure 5) remained erratic throughout the 2002/2003 marketing year, but generally demonstrated a larger negative effect on prices in comparison with the prior marketing years. During the beginning and end of the marketing year the color grade varied considerably with severe discounts. Figure 6

provides a comparison of the premiums and discounts for the first digit of the color grade for the 2002/03 and 2001/02 marketing years. On the average, discounts for the 2002/03 marketing year increased for color grades 5 and 6 in comparison to the 2001/02 marketing year and color grades 1, 2, and 3 again did not receive any premiums. Discounts for the second digit of the color grade in 2002 (Figure 7) remained about the same compared to the 2001 crop year.

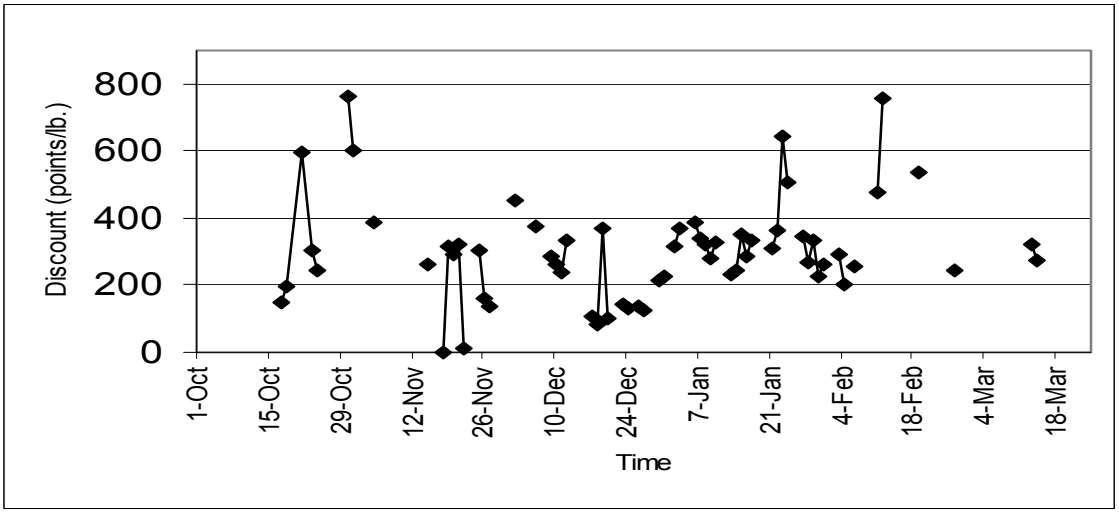

Figure 5: Color Grade 42 Discounts for the 2002/03 Marketing Year, West Texas.

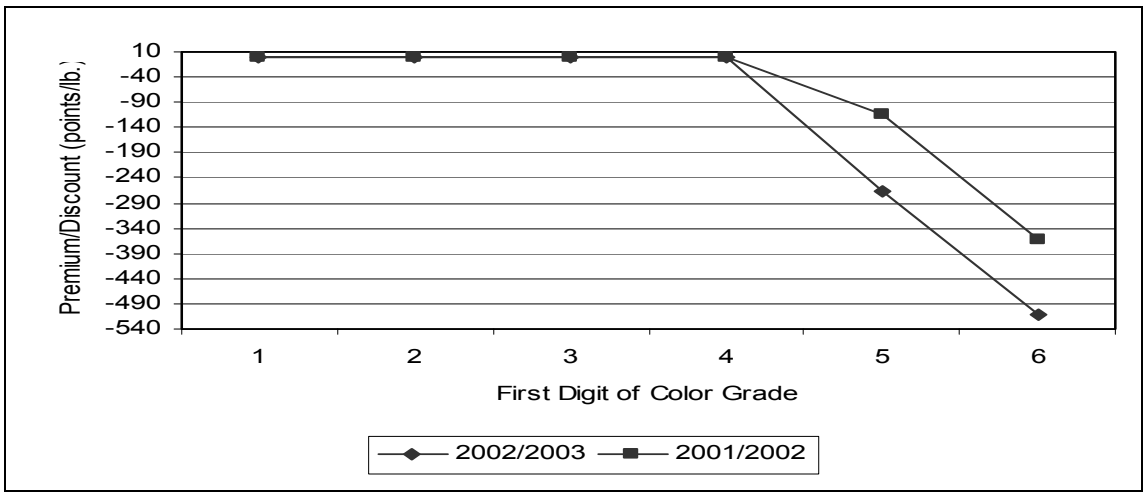

Figure 6: First Digit of the Color Grade Premiums/Discounts, 2002/03 and 2001/02, West Texas.

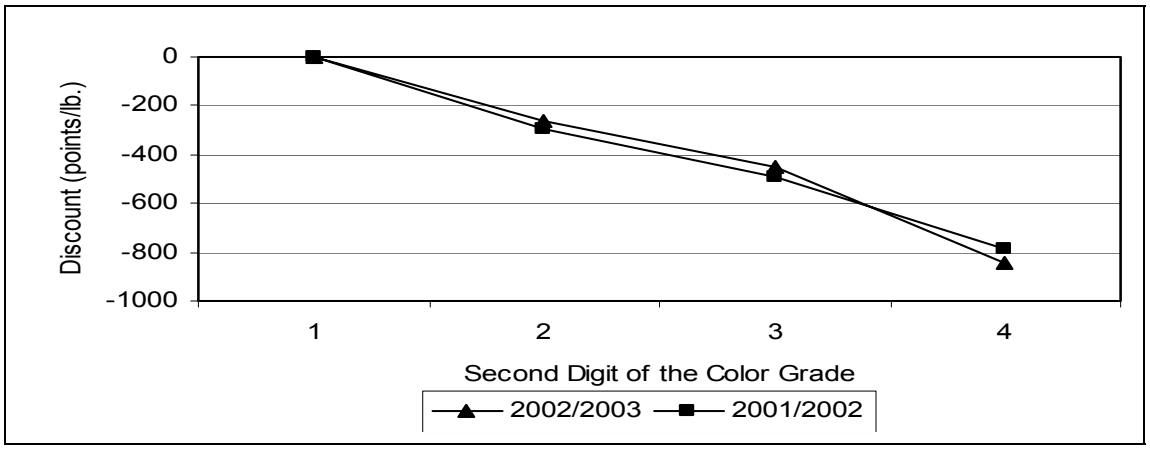

Figure 7: Second Digit of the Color Grade Discounts, 2002/03 and 2001/02, West Texas.

Staple

The discounts received for staple length 33 in the 2002/03 marketing year were similar to those recieved the 2001/02 marketing year. They exhibited a narrow range throughout the season which fluctuations remaining between 50 to 150 points/lb, with the exception of a few days at the beginning of the marketing season when the discounts were much higher (Figure 8).

Figure 9 illustrates that shorter staple lengths were discounted more severely in the 2002/03 marketing year than in the 2001/02 year, while higher staple levels continued to receive very little premium. This could be attributed to market's continued resistance to shorter staple lengths.

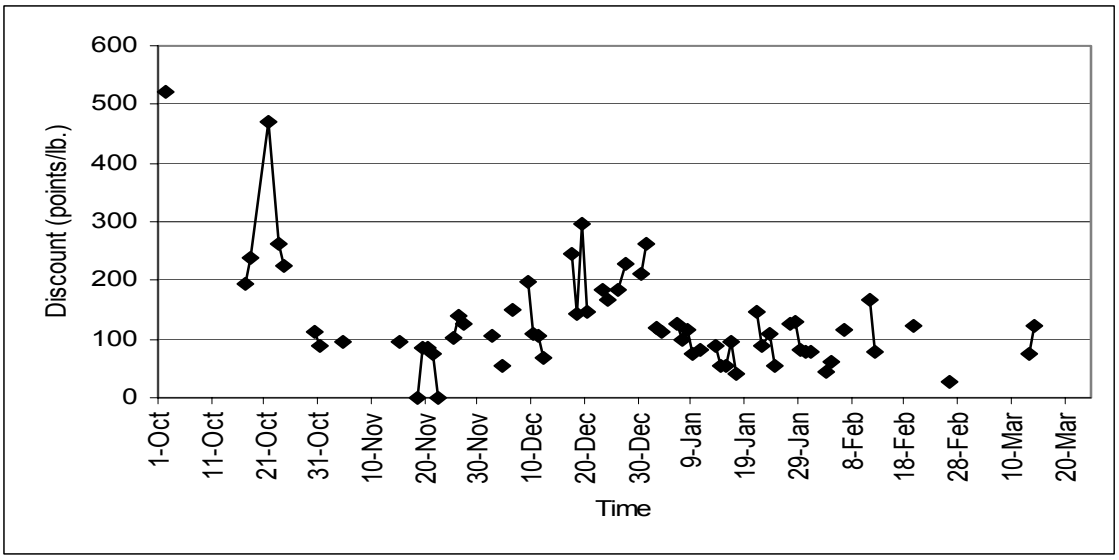

Figure 8: Staple Length 33 Discounts for the 2002/03 Marketing Year, West Texas.

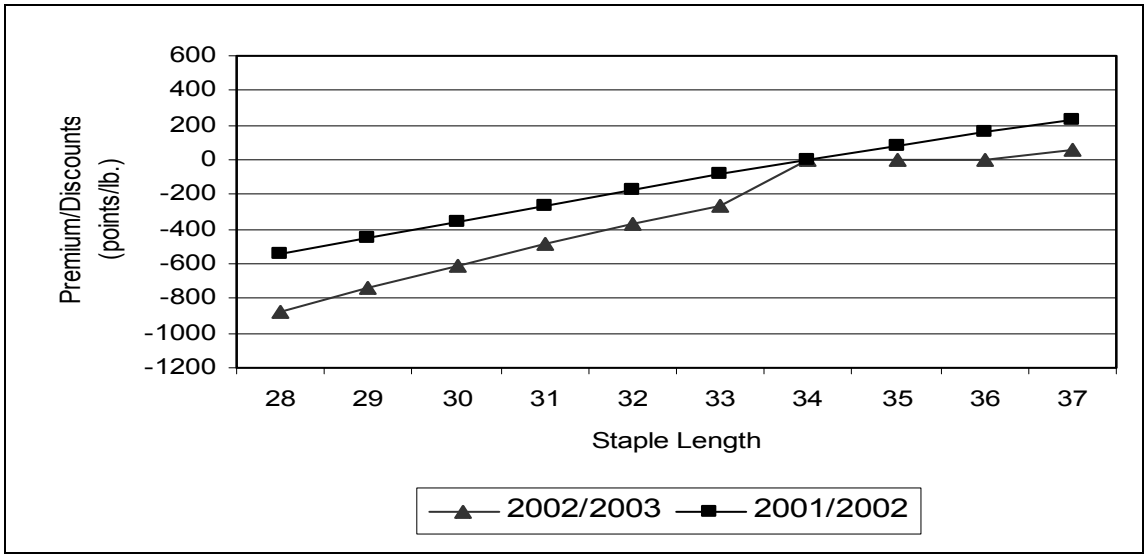

Figure 9: Staple Length Premiums/Discounts, 2002/03 and 2001/02, West Texas.

Strength

Figure 10 provides an illustration of the pattern of discounts for strength 26, which exhibited very little fluctuations during the 2002/03 marketing year, except for a few erratic movements. There were many days during the 2002/03 marketing year when strength did not have any impact on price (Figure 10). Lower levels of strength were discounted less severely for the 2002/03 marketing year, while higher levels of strength continued to receive very small or no premiums (Figure 11). This continues the trend that was observed in 2001 of having small to no premiums for higher levels of strength.

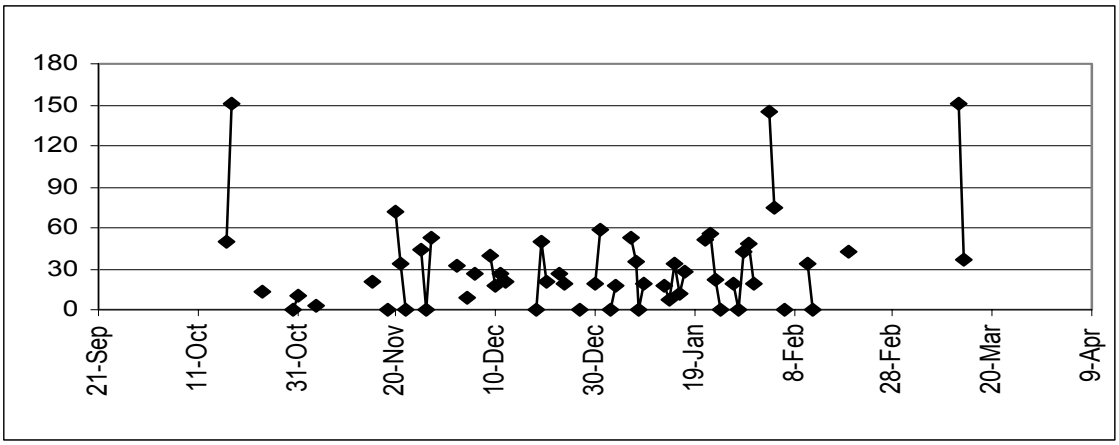

Figure 10: Strength 26 Discounts for the 2002/03 Marketing Year, West Texas

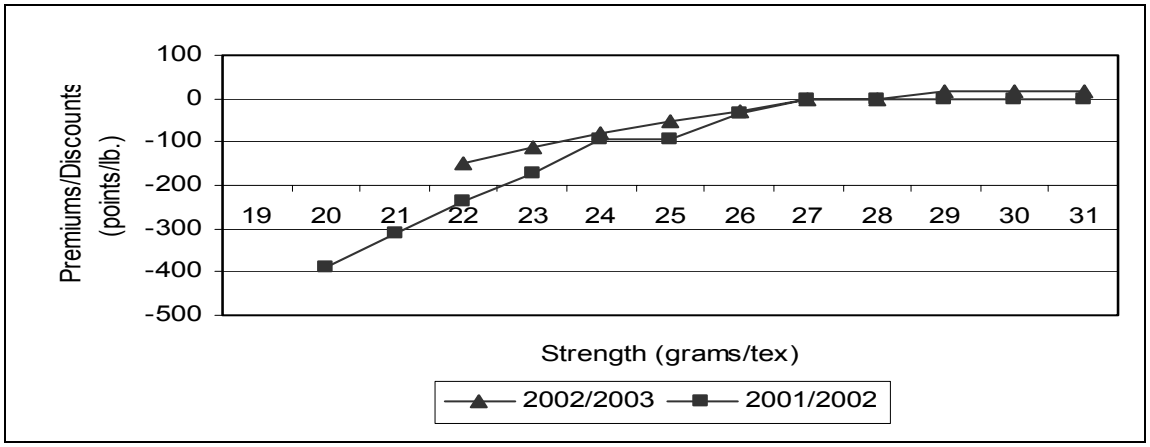

Figure 11: Strength Premiums/Discounts, 2002/03 and 2001/02, West Texas.

Micronaire

Discounts for micronaire 3.35 in 2002/2003 showed similarly erratic pattern to that of the previous year (Figure 12), ranging mostly between the 100 and 300 points/lb. The low ranges of micronaire were discounted slightly more when compared to the previous year, while the high ranges of micronaire were discounted relatively lower in the 2002/03 marketing year compared to the previous year (Figure 13).

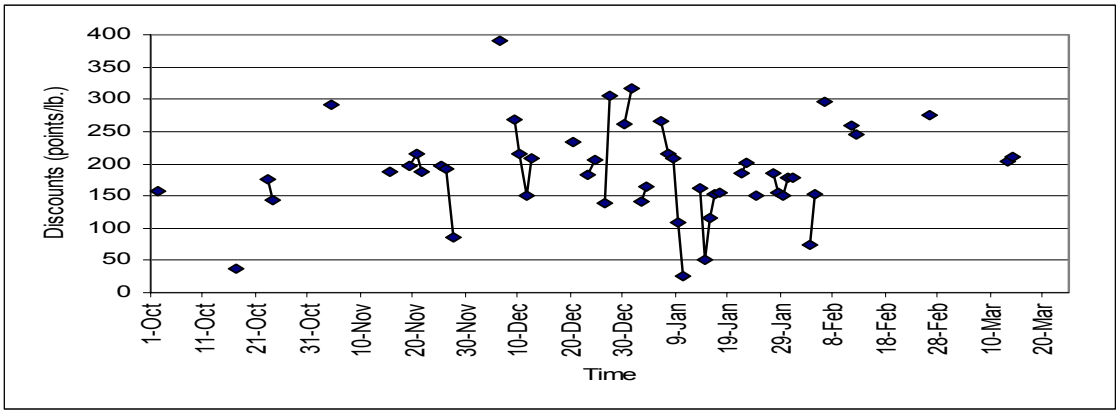

Figure 12: Micronaire 3.35 Discounts for the 2002/03 Marketing Year, West Texas.

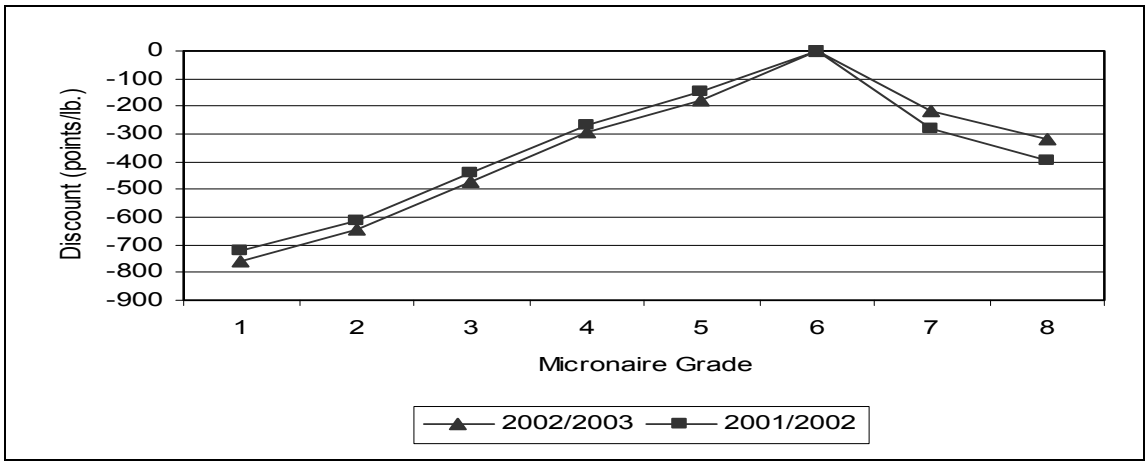

Figure 13: Micronaire Discounts, 2002/03 and 2001/02, West Texas.

Bark and Other Extraneous Matter

Discounts for level 1 bark fluctuated widely throughout the year (Figure 14). The majority of the season's discounts fell within the range of 50 and 300 points/lb., which is lower than the 2001/02 marketing year. Figure 15 illustrates a comparison of level 1 bark discounts between the 2002/03 and 2001/02 marketing years. The 2002 crop discounts for level 1 bark were higher than during the previous year (Figure 15). The incidence of other extraneous matter was observed in a very small quantity for the 2002 crop season, which makes it difficult to interpret and draw conclusions on the patterns of these attributes.

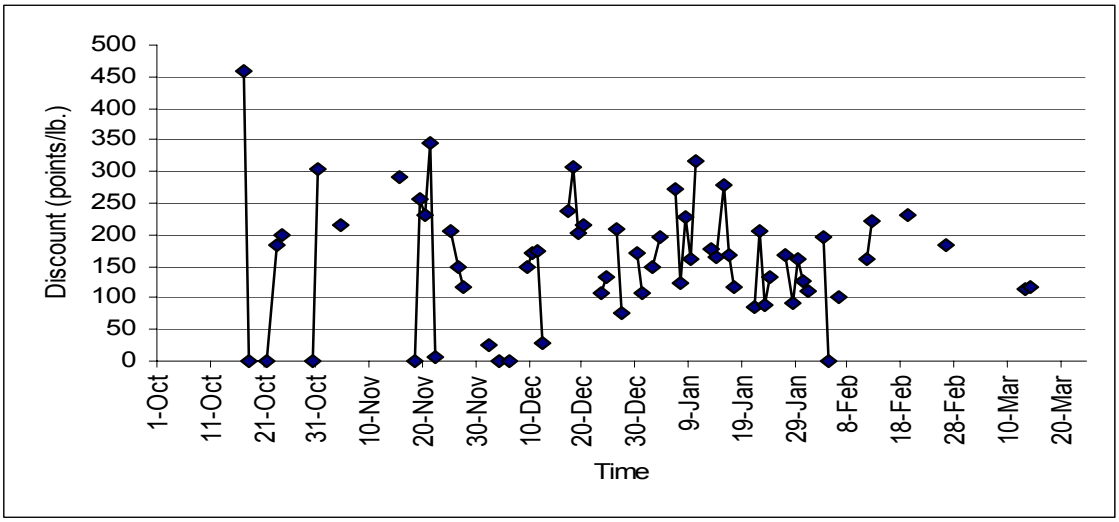

Figure 14: Level 1 Bark Discounts for the 2002/03 Marketing Year, West Texas.

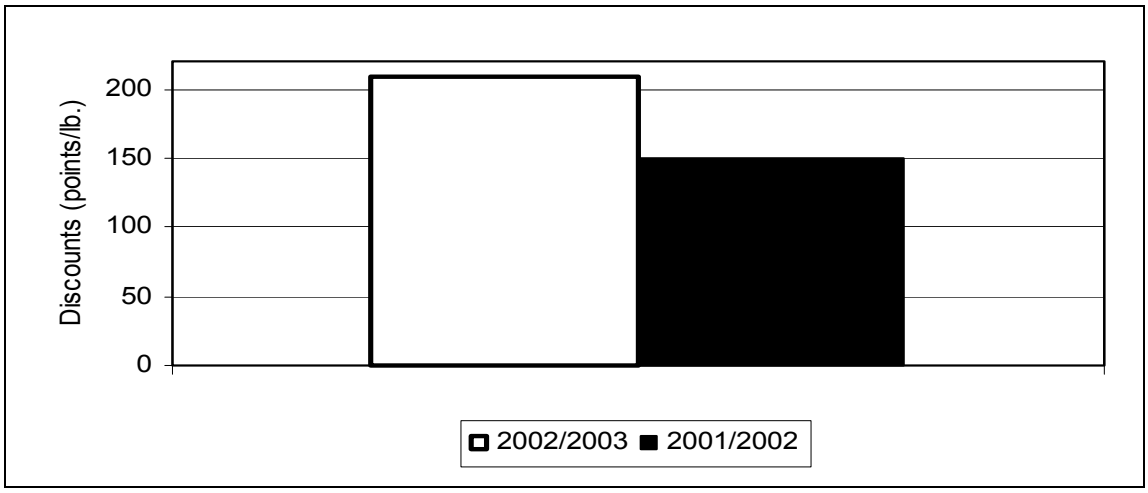

Figure 15: Level 1 Bark Discounts, 2002/03 and 2001/02, West Texas.

Uniformity and Preparation

Figure 16 shows that discounts for uniformity 80 in the 2002/03 marketing year were erratic. Figure 17 illustrates the relationship between the 2002/03 crop year and the 2001/02 crop year for uniformity, indicating that the lower levels of uniformity were discounted slightly more when compared to the previous crop year, while higher levels of uniformity received marginally larger premiums. The incidence of preparation was observed in a very small quantity for the 2002 crop season, which makes it difficult to interpret and draw conclusions on the pattern of this attribute.

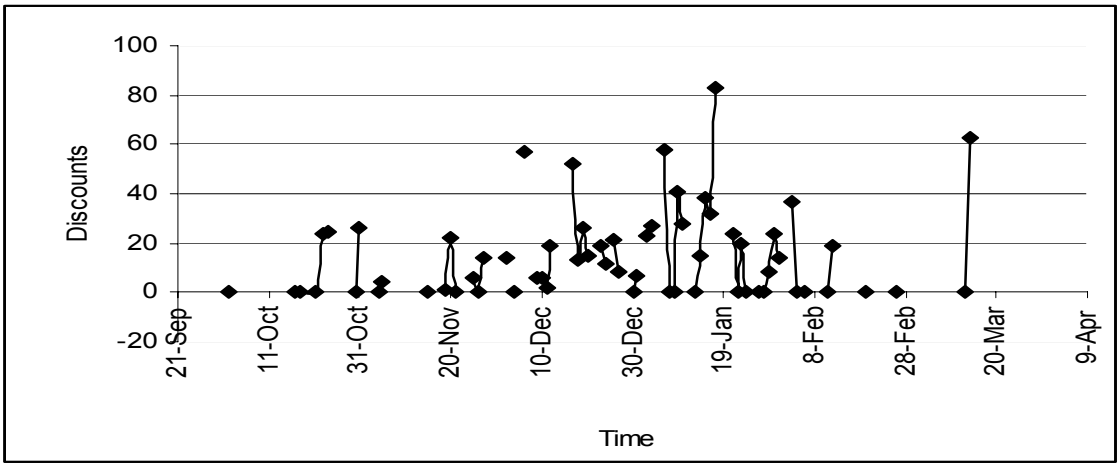

Figure 16: Uniformity 80 Discounts, 2002/03 Marketing Year, West Texas.

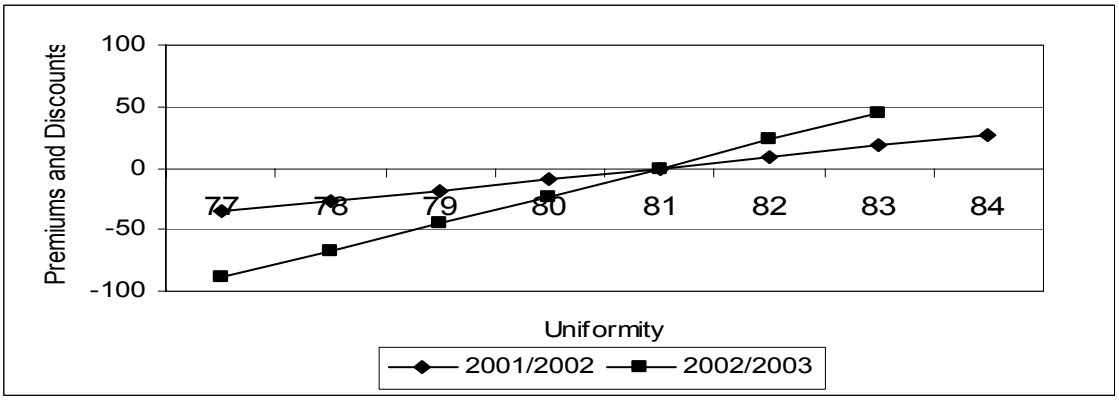

Figure 17: Uniformity Discounts, 2002/03 and 2001/02, West Texas.

Summary

The average price for the 2002/03 marketing year increased to a level similar to that of the 1999/00 marketing year. In comparison to the 2001/02 marketing year the average price increased by 15.68 cents/lb from 26.30 cents/lb to 41.98. Prices at the beginning of the 2002 season were at the level of the previous year's ending price. Producer prices gradually increased throughout the season, closing around 50 cents/lb toward the end of the marketing The volume of sales transaction were much higher than those of the previous year, this is likely due to the number of bales held over from the

previous year. The volume of producer spot market sales as recorded by the DPES showed a 66.5% increase in 2002/03 from the 2001/02 marketing year.

Overall, the 2002 crop for Texas and Oklahoma was similar to that of the previous year in quality with the exception of level 1 bark, leaf grade, and the first digit of the color grade. In comparison to the 2001/02 marketing year, discounts and premiums increased or remained about the same for all quality attributes except for the strength and micronaire. Lower levels of strength and higher ranges of micronaire were discounted less severely in 2002/03 marketing year in comparison to the 2001/02 marketing year.

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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:

$$P = \beta_0 e^{\beta_1 LF + \beta_2 LF^2 + \beta_3 RD + \beta_4 RD^2 + \beta_5 PB + \beta_6 PB^2 + \beta_7 UNI + \beta_8 STA + \beta_9 STA^2 + \beta_{10} STR + \beta_{11} STR^2}$$

$$e^{\beta_{12} M + \beta_{13} M^2 + \beta_{14} LB + \beta_{15} LB^2 + \beta_{16} HB + \beta_{17} LO + \beta_{18} HO + \beta_{19} PA + \beta_{20} PB + \beta_{21} R}$$

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 2002/03 marketing year. The procedures of Brown et al. (1995) indicated that this model specification best fits the 2002/03 marketing year data. The parameters of the model for the 2002/03 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 2002/2003 Marketing Year Model.

Dependent Variable = Log(Price)

Definition of the Variables	Variables	Parameters	Estimates
Constant Term		β_0	-2.9335
Average leaf grade (1 through 7)	LF	β_1	-0.00306
Average leaf grade squared	LF^2	β_2	-0.00207
Average RD	RD	β_3	0.06523
Average RD squared	RD^2	β_4	-0.00040
Average PlusB	PB	β_5	-0.01605
Average PlusB squared	PB^2	β_6	0.00036
Percentage uniformity length	UNI	β_7	0.00309
Average staple length (32nds of an inch)	STA	β_8	0.12260
Average staple length squared	STA^2	β_9	-0.00149
Average strength of the cotton (grams/tex)	STR	β_{10}	0.03094
Average strength squared	STR^2	β_{11}	-0.00050
Average micronaire reading	M	β_{12}	0.49559
Average micronaire squared	M^2	β_{13}	-0.05932
Percentage of bales classed as level 1 bark	LB	β_{14}	-0.02277
Percentage of bales classed as level 1 bark squared	LB^2	β_{15}	-0.02564
Percentage of bales classed as level 2 bark	HB	β_{16}	-0.45329
Percentage of bales classed as level 1 other extraneous matter	LO	β_{17}	-0.26889
Percentage of bales classed as level 2 other extraneous matter	HO	β_{18}	-0.01384
Percentage of bales classed as level 1 preparation	PA	β_{19}	-0.34895
Percentage of bales classed as level 2 preparation	PB	β_{20}	-0.06591
Region (R=0 for West Texas, R=1 for East Texas and Oklahoma)	R	β_{21}	-0.00588