TEXAS-OKLAHOMA PRODUCER COTTON MARKET SUMMARY: 2000/2001

Jason Ward, Jeannie Nelson,
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

CER-01-18

September 2001

The authors are Research Assistant, Research Assistant, 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 data, and Phil Johnson, Samarendu Mohanty, and Jeff Johnson for their comments and suggestions.

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

Abstract

The size of the Texas-Oklahoma spot market analyzed by the Daily Price Estimation System (DPES) for the 2000/2001 marketing year decreased considerably from the previous year. The average price received by producers during the 2000/2001 marketing year was about 50.9 cents/lb. The 2000 crop was generally of good quality, but the averages for the first digit of the color grade and leaf grade detoriated as compared with the 1999 crop. The percentage of bales having level 1 and 2 bark, and level 1 and 2 other extraneous matter decreased in comparison to the 1999 crop. With the exception of the second digit of the color grade price discounts for the 2000 crop decreased for all quality attributes. The premiums for the first digit of the color grade and strength both decreased, while the premium for leaf increased and that of staple remained about the same.

Table of Contents

	Page
Abstract	i
Table of Contents	ii
Tables and Figures	iii
Introduction	1
2000/2001 Crop Statistics	1
Average 2000/2001 Prices, Premiums and Discounts	5
Patterns of Premiums and Discounts	6
Leaf Grade	9
Color Grade	10
Staple	13
Strength	14
Micronaire	16
Bark	17
Other Extraneous Matter	19
Uniformity and Preparation	19
Summary	19
References	21
Appendix A: The DPES Model and Yearly Parameter Estimates	22

Tables and Figures

Table — Page

1. Texas-Oklahoma Crop Statistics from the DPES, by Marketing Year. 2
2. 2000/2001 Weighted Average Price Estimates from the DPES, West Texas. 7
3. 2000/2001 Weighted Average Price Estimates from the DPES, East Texas/Oklahoma. 8

Figure

1. Daily Volume of Transactions for the 2000/2001 Marketing Year. 4
2. Movement of Base Prices for the 2000/2001 Marketing Year, West Texas. 4
3. Leaf Grade 3 Premiums for the 2000/2001 Marketing Year, West Texas. 9
4. Leaf Grade Premiums/Discounts, 1999/2000 and 2000/2001, West Texas. 10
5. Color Grade 42 Discounts for the 2000/2001 Marketing Year, West Texas. 11
6. First Digit of the Color Grade Premiums/Discounts, 1999/2000 and 2000/2001, West Texas. 12
7. Second Digit of the Color Grade Discounts, 1999/2000 and 2000/2001, West Texas. 12
8. Staple Length 33 Discounts for the 2000/2001 Marketing Year, West Texas. 13
9. Staple Length Premiums/Discounts, 1999/2000 and 2000/2001, West Texas. 14
10. Strength 29 Premiums for the 2000/2001 Marketing Year, West Texas. 15
11. Strength Premiums/Discounts, 1999/2000 and 2000/2001, West Texas. 15
12. Micronaire 3.35 Discounts for the 2000/2001 Marketing Year, West Texas. 16
13. Micronaire Discounts, 1999/2000 and 2000/2001, West Texas. 17
14. Level 1 Bark Discounts for the 2000/2001 Marketing Year, West Texas. 18
15. Bark Discounts, 1999/2000 and 2000/2001, West Texas. 18

TEXAS-OKLAHOMA PRODUCER COTTON MARKET SUMMARY: 2000/2001

Introduction

This report summarizes the price, premium, and discount estimates for the 2000/2001 marketing year (also referred to as the 2000 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, which 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.

2000/2001 Crop Statistics

Table 1 provides a summary of the crop in terms of simple averages for the 2000/2001 marketing year and compares with the previous three years of crop performance (Nelson et al. 2000). For the 2000/2001 marketing year, a total of 222,283 bales (185,846 bales from West Texas and 36,437 bales from East Texas/Oklahoma) and 3,030 sales transactions were used in the DPES estimations. This represents about 6% of the 4.1 million bale crop in Texas and Oklahoma (TASS, 2001; USDA, 2001).

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

Attribute	2000/2001	1999/2000	1998/1999	1997/1998
Price (cents/lb.)	50.90	37.82	51.14	57.99
Bales per Sale	215	74	82	87
Leaf Grade	3.35	2.74	3.29	3.40
First Digit of Color Grade	3.03	2.37	2.84	2.48
Second Digit of Color Grade	1.38	1.19	1.37	1.70
Staple	32.58	32.58	33.21	33.57
Strength	27.00	27.62	27.70	28.68
Micronaire	3.87	4.17	4.17	3.95
Uniformity	80.11	--	--	--
Level 1 Bark (%)	0.30	6.03	11.90	22.74
Level 2 Bark (%)	0	0.02	0	0.95
Level 1 Other (%)	0.002	0.60	0.30	0.86
Level 2 Other (%)	0	0.03	0	0.48
Preparation 1 (%)	0	--	--	--
Preparation 2 (%)	0	--	--	--

The number of sale transactions and bales sold received by the DPES for the 2000 crop year decreased by about 74% from the previous year. This lower volume could be contributed to a depressed market after January, which resulted in increased carryover. The number of bales per sale increased from 74 bales in 1999/2000 to 215 bales in 2000/2001 (Table 1). This reflects a change in the trend of a decrease in number of bales per sale observed over the last 3 years.

The 2000 crop was characterized by a shorter length marketing year, running from the end of October to the beginning of March, compared to the 1999 marketing year, which ran from mid October through mid April. Figure 1 illustrates the pattern of sale transactions during the 2000/2001 marketing year. After February 1, sales dropped off sharply and several periods of little to no market activity occurred throughout the remainder of the season. The average price received by producers increased, after a four-year decline, rising to 50.90 cents/lb. However, the average market price observed by the DPES could be misleading because the system was unable to run, due to insufficient data, during periods of depressed price levels and little market activity. In the previous year, there was a clear upward trend in the base price movement throughout the marketing year. In contrast, the base price rose during the first quarter and then declined during the remainder of the 2000/2001 marketing year (Figure 2).

The average leaf grade increased from 2.74 in 1999/2000 to 3.35 in 2000/2001 (Table 1). The first digit of the color grade, indicating the degree of reflectance (grayness), worsened to an average of 3.03. The second digit of the color grade, indicating the degree of yellowness, increased (worsened) from 1.19 in 1999 to 1.38 for the 2000 crop year, which was about the same as in 1998/1999.

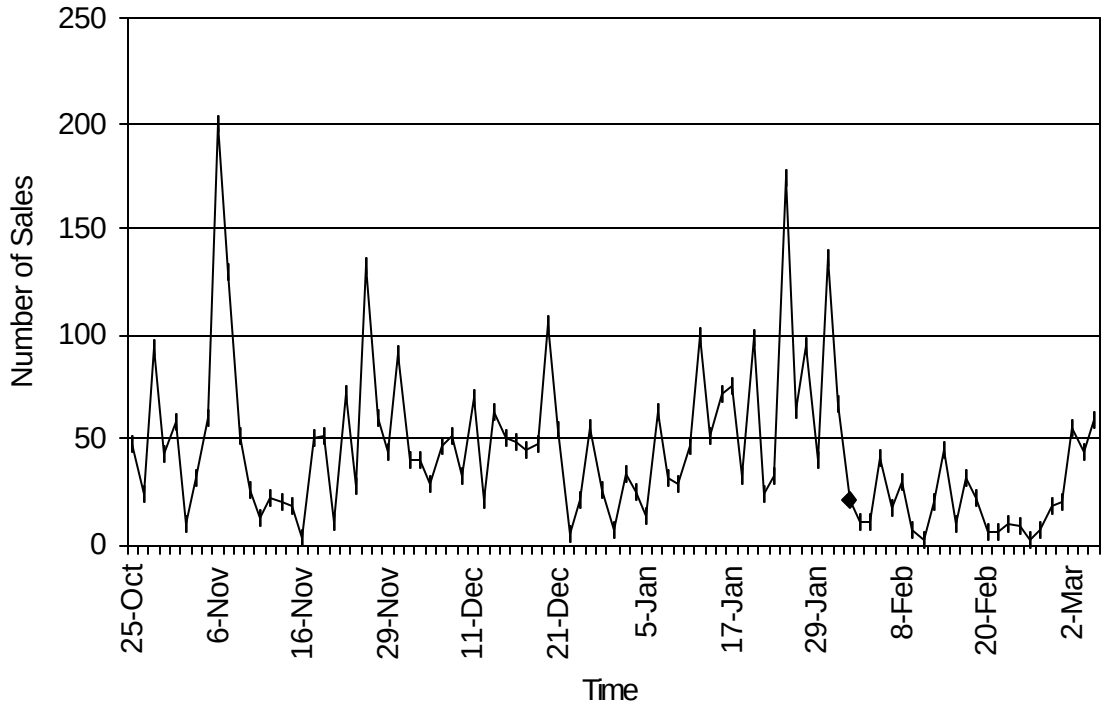


Figure 1: Daily Volume of Transactions for the 2000/2001 Marketing Year.

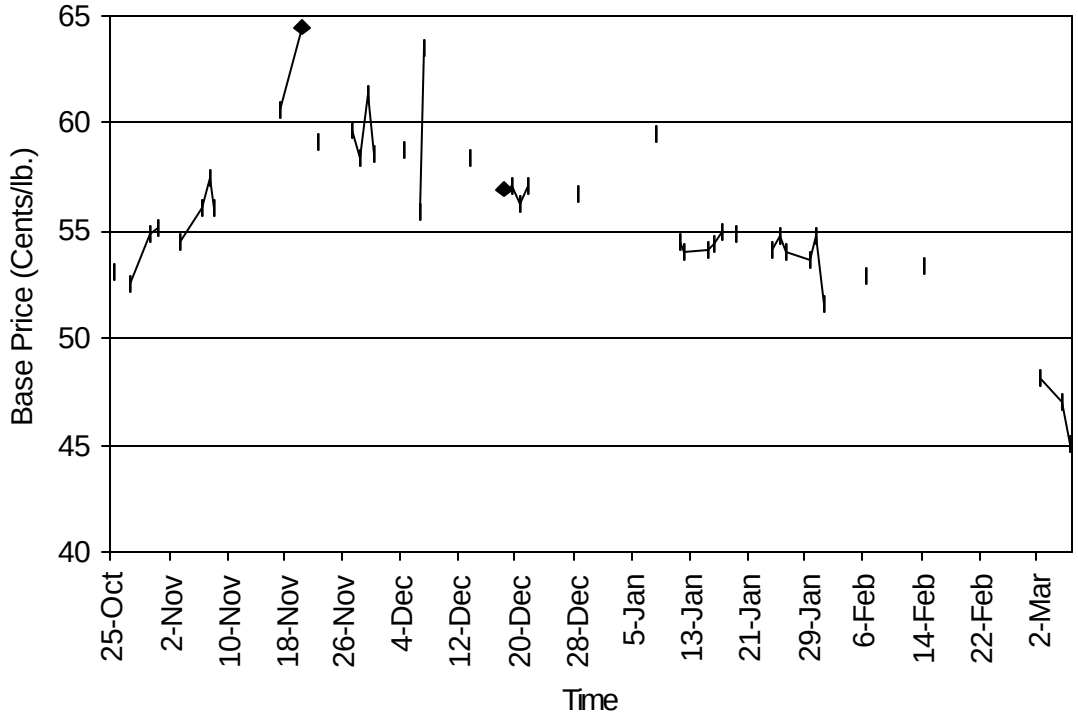


Figure 2: Movement of Base Prices for the 2000/2001 Marketing Year, West Texas.

The average staple length remained stable at 32.58 32nds/inch from 1999 to 2000 crop. Average strength decreased from 27.62 grams/tex. to 27.00 grams/tex. Micronaire dropped from 4.17 in 1999/2000 to 3.87 in 2000/2001.

Bark is reported as the percentage of bales having level 1 or 2 bark. Average level 1 bark decreased from 6.03 to 0.30. The DPES did not observe any transactions with level 2 bark in 2000. Other extraneous matter is also 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 other extraneous matter remained relatively low at 0.002%, while level 2 other extraneous matter was not observed. The incidence of level 1 and 2 preparation (reported as the percentage of bales) was observed in a limited number of sales.

Average 2000/2001 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 2000/2001 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 2000/2001 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, which contains the discounts and premiums for color grade and staple length, and the 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 55.82 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 2.68 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.

The zeros in the premium and discount columns for micronaire, leaf, uniformity, and strength represent the base quality as defined by USDA through the 2000/2001 marketing year.

Patterns of Premiums and Discounts

The following section summarizes the average premiums and discounts for each fiber quality attribute observed throughout the 2000/2001 marketing year. The movements of each individual attribute's premiums and discounts over 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.

Table 2. 2000/2001 Weighted Average Price Estimates from the DPES, West Texas
Weekly Weighted Average from the Daily Spot Cotton Price Estimates
Dept. of Ag. and Applied Econ., Texas Tech Univ. # Sales: 2448
Date: 2000 Year Region: West Texas # Bales: 185846
Color Grade and Strength Premiums and Discounts in Points[a]/lb.

	Staple Length										
Col Grade	28	29	30	31	32	33	34	35	36	37	38
11	-915	-771	-623	-472	-318	-161	0	164	332	503	--
21	-915	-771	-623	-472	-318	-161	0	164	332	503	--
31	-915	-771	-623	-472	-318	-161	0	164	332	503	--
41	-915	-771	-623	-472	-318	-161	55.82[b]	164	332	503	--
51	-1007	-866	-721	-573	-422	-268	-110	50	215	382	--
61	-1222	-1087	-949	-808	-664	-517	-367	-214	-57	103	--
71	-1595	-1472	-1346	-1217	-1085	-951	-813	-673	-530	-384	--
12	-1091	-952	-810	-665	-517	-365	-210	-52	109	274	--
22	-1091	-952	-810	-665	-517	-365	-210	-52	109	274	--
32	-1118	-980	-839	-694	-547	-397	-243	-86	75	238	--
42	-1179	-1043	-904	-762	-616	-468	-316	-161	-3	158	--
52	-1314	-1182	-1047	-909	-768	-624	-477	-327	-174	-18	--
62	-1534	-1409	-1281	-1151	-1017	-881	-741	-599	-453	-305	--
23	-1218	-1083	-945	-804	-660	-513	-362	-209	-52	108	--
33	-1270	-1137	-1001	-861	-719	-574	-425	-273	-119	39	--
43	-1363	-1232	-1099	-963	-823	-681	-536	-387	-236	-81	--
53	-1526	-1400	-1272	-1141	-1007	-870	-731	-588	-442	-294	--
63	-1760	-1642	-1522	-1398	-1272	-1143	-1012	-877	-740	-600	--
34	-1515	-1389	-1261	-1130	-995	-858	-718	-575	-429	-280	--
44	-1641	-1520	-1395	-1268	-1138	-1005	-869	-730	-589	-445	--
54	-1826	-1710	-1592	-1470	-1346	-1220	-1090	-958	-823	-686	--

Micronaire Differences Points/lb.

Mike Range	Disc.
<24	-806
25 - 26	-676
27 - 29	-480
30 - 32	-284
33 - 34	-157
35 - 49	0
50 - 52	-313
>53	-443

Leaf Grade Differences Points/lb.

Leaf Grade	Prem./ Disc.
1	192
2	134
3	70
4	0
5	-77
6	-159
7	-247

	Disc.	
	Level 1	Level 2
Bark	-186	----
Preparation	-1650	-1650
Other Ext. Matter	-1108	----

Uniformity Differences Points/lb.

Uniform	Disc./ Prem.
<77	-94
78	-71
79	-47
80	-24
81	0
82	24
83	48
84	--
85	--
>86	--

Strength Differences Points/lb.

Grams/ Tex.	Disc./ Prem.
<18	--
19	-180
20	-150
21	-122
22	-97
23	-73
24 - 25	-43
26	-19
27 - 28	0
29	13
30	19
31	22
>32	22

[a]100 points = 1 cent
[b]Base Price in cents/lb.

Table 3. 2000/2001 Weighted Average Price Estimates from the DPES, East Texas/Oklahoma

Weekly Weighted Average from the Daily Spot Cotton Price Estimates

Dept. of Ag. and Applied Econ., Texas Tech Univ. # Sales: 582

Date: 2000 Year Region: East Texas/Oklahoma # Bales: 36437

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

	Staple Length										
Col Grade	28	29	30	31	32	33	34	35	36	37	38
11	-915	-771	-623	-472	-318	-161	0	164	332	503	--
21	-915	-771	-623	-472	-318	-161	0	164	332	503	--
31	-915	-771	-623	-472	-318	-161	0	164	332	503	--
41	-915	-771	-623	-472	-318	-161	55.83[b]	164	332	503	--
51	-1007	-866	-721	-574	-422	-268	-110	50	215	382	--
61	-1222	-1087	-949	-808	-664	-517	-367	-214	-57	103	--
71	-1595	-1472	-1346	-1217	-1086	-951	-814	-673	-530	-384	--
12	-1091	-952	-810	-665	-517	-365	-210	-52	109	274	--
22	-1091	-952	-810	-665	-517	-365	-210	-52	109	274	--
32	-1118	-980	-839	-695	-547	-397	-243	-86	75	238	--
42	-1179	-1043	-904	-762	-617	-468	-316	-161	-3	158	--
52	-1314	-1182	-1047	-909	-769	-625	-477	-327	-174	-18	--
62	-1535	-1410	-1282	-1151	-1017	-881	-741	-599	-454	-305	--
23	-1218	-1083	-945	-804	-660	-513	-362	-209	-52	108	--
33	-1270	-1137	-1001	-862	-719	-574	-425	-273	-119	39	--
43	-1363	-1233	-1099	-963	-824	-681	-536	-387	-236	-81	--
53	-1526	-1401	-1273	-1141	-1008	-871	-731	-588	-442	-294	--
63	-1761	-1643	-1522	-1399	-1272	-1144	-1012	-877	-740	-600	--
34	-1516	-1390	-1261	-1130	-996	-858	-718	-575	-429	-280	--
44	-1642	-1520	-1396	-1268	-1138	-1005	-869	-731	-589	-445	--
54	-1827	-1711	-1592	-1471	-1347	-1220	-1091	-959	-824	-686	--

Micronaire Differences Points/lb.		Leaf Grade Differences Points/lb.		Uniformity Differences Points/lb.		Strength Differences Points/lb.	
Mike Range	Disc. -806	Leaf Grade	Prem./ Disc.	Uniform	Disc./ Prem.	Grams/ Tex.	Disc./ Prem.
<24	-676	1	192	<77	-94	<18	--
25 - 26	-481	2	134	78	-71	19	-180
27 - 29	-285	3	70	79	-47	20	-150
30 - 32	-157	4	0	80	-24	21	-122
33 - 34	0	5	-77	81	0	22	-97
35 - 49	-313	6	-159	82	24	23	-74
50 - 52	-443	7	-247	83	48	24 - 25	-43
>53				84	--	26	-19
				85	--	27 - 28	0
				>86	--	29	13
		Disc.				30	19
		Level 1	Level 2			31	22
Bark		-186	----			>32	22
Preparation		-1650	-1650				
Other Ext. Matter		-1108	----				

[a]100 points = 1 cent

[b]Base Price in cents/lb.

Leaf Grade

Figure 3 presents the leaf grade 3 premiums for the 2000/2001 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 25 and 100 points/lb. throughout this marketing year. Figure 4 illustrates the average premiums and discounts associated with each leaf grade for the 2000/2001 marketing year in comparison with the 1999/2000 marketing year. While the premiums did not experience a significant change from the previous year, discounts for high leaf levels in the 2000/2001 marketing year showed a relative decrease.

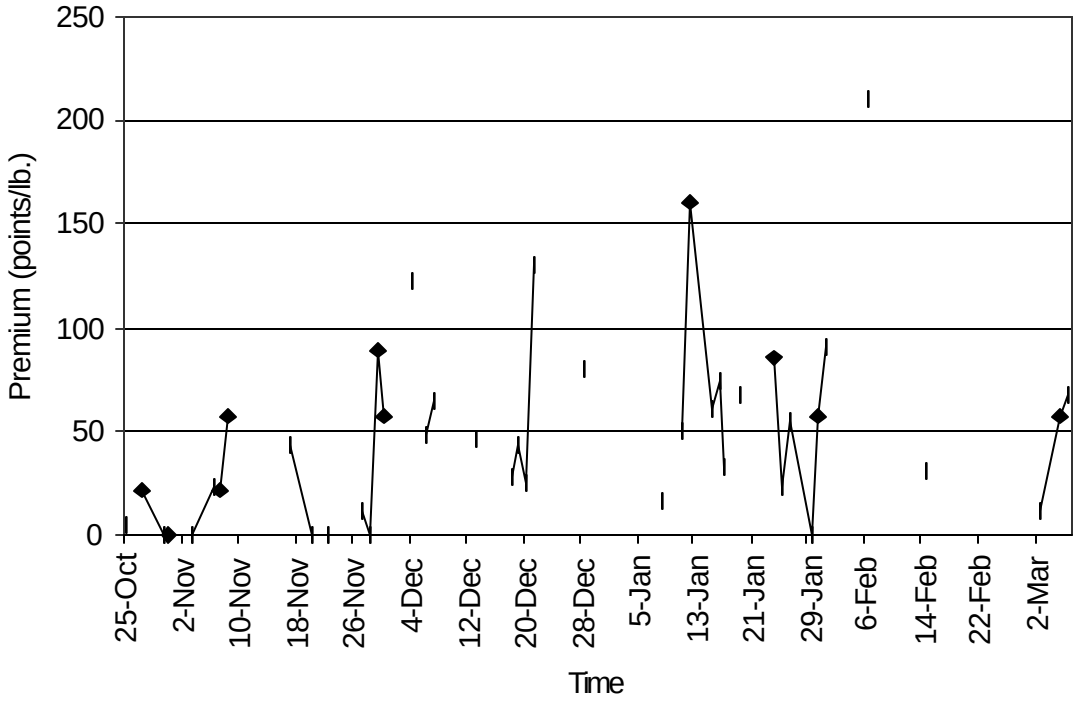


Figure 3: Leaf Grade 3 Premiums for the 2000/2001 Marketing Year, West Texas.

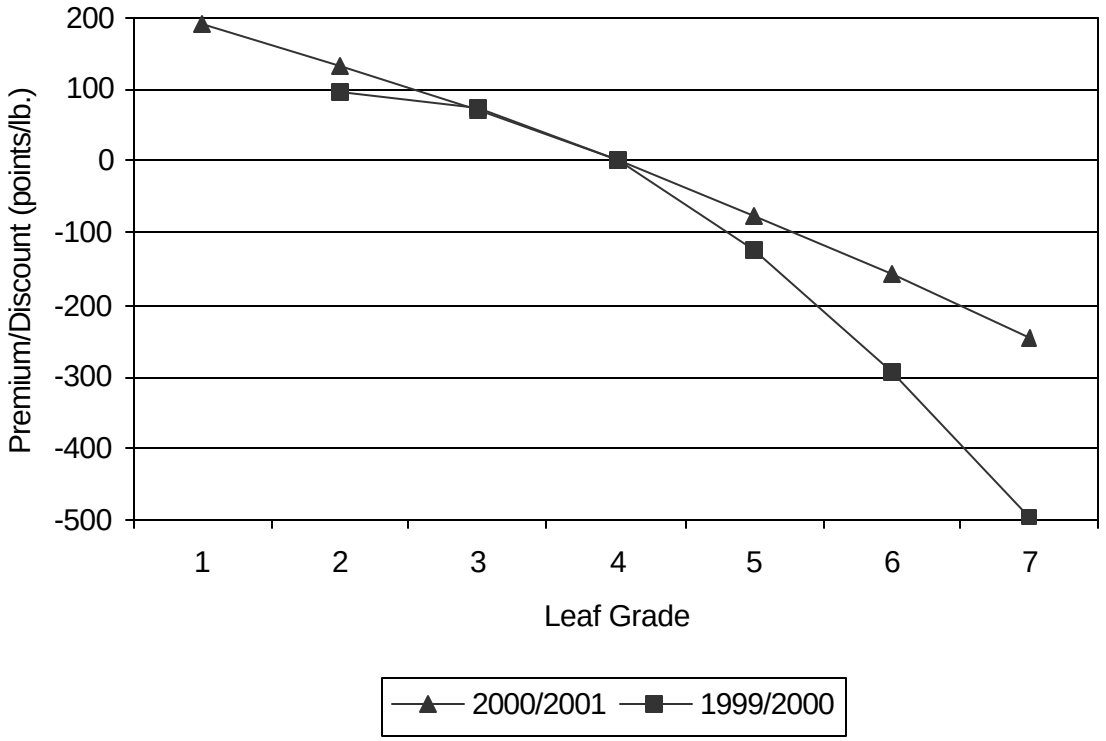


Figure 4: Leaf Grade Premiums/Discounts, 2000/2001 and 1999/2000, West Texas.

Color Grade

The discount for color grade 42 (Figure 5) remained erratic throughout the 2000/2001 marketing year. In comparison with prior marketing years, the 2000/2001 marketing year demonstrated that color grade had more of an impact on prices. During the months of November and December, the color grade varied and influenced prices more drastically with the majority of discounts falling between 200 and 500 points/lb. Figure 6 provides a comparison of the premiums and discounts for the first digit of the color grade for the 2000/2001 and 1999/2000 marketing years. On an average, discounts decreased from the 1999/2000 marketing year to the 2000/2001crop year, while premiums never played a role in the 2000 crop season. This implies that color grades 1,

2, 3, and 4 did not receive a premium this crop year, while levels of reflectance above the base level were discounted more severely in 1999/2000. The lower discounts in 2000 could be attributed to the lack of availability of cotton with the first digit of the color grade of 4. Discounts for the second digit of the color grade (Figure 7) increased compared to the 1999 crop year. Cotton with increasing levels of yellowness was more severely discounted than in the 1999/2000 marketing year.

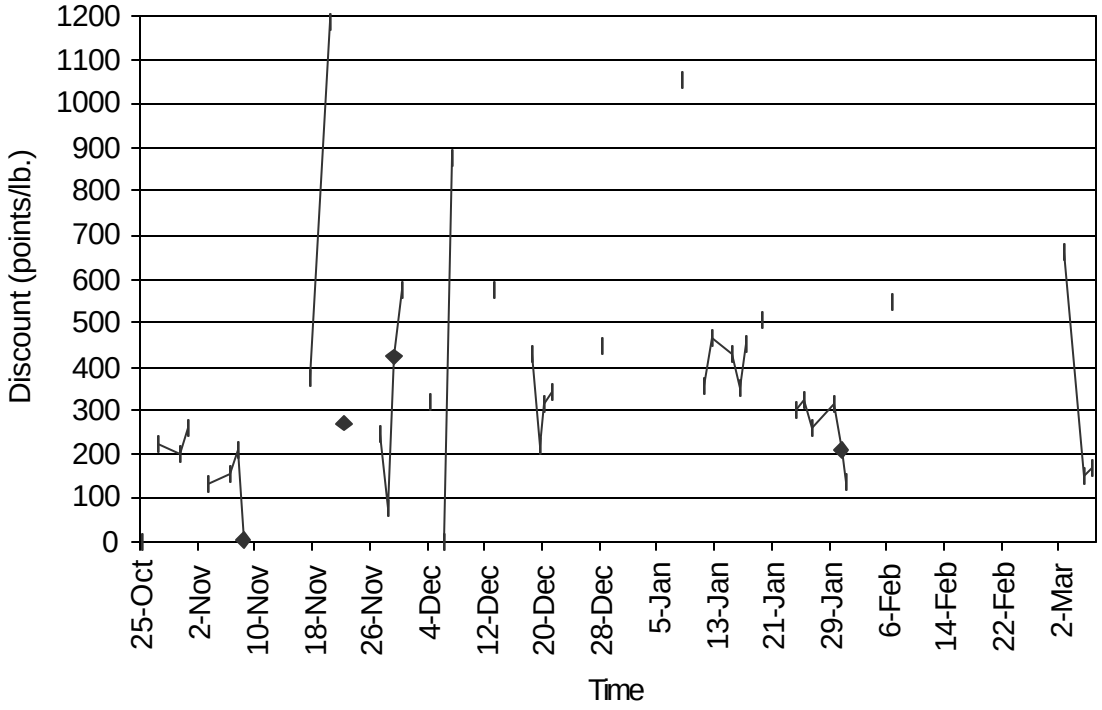


Figure 5: Color Grade 42 Discounts for the 2000/2001 Marketing Year, West Texas.

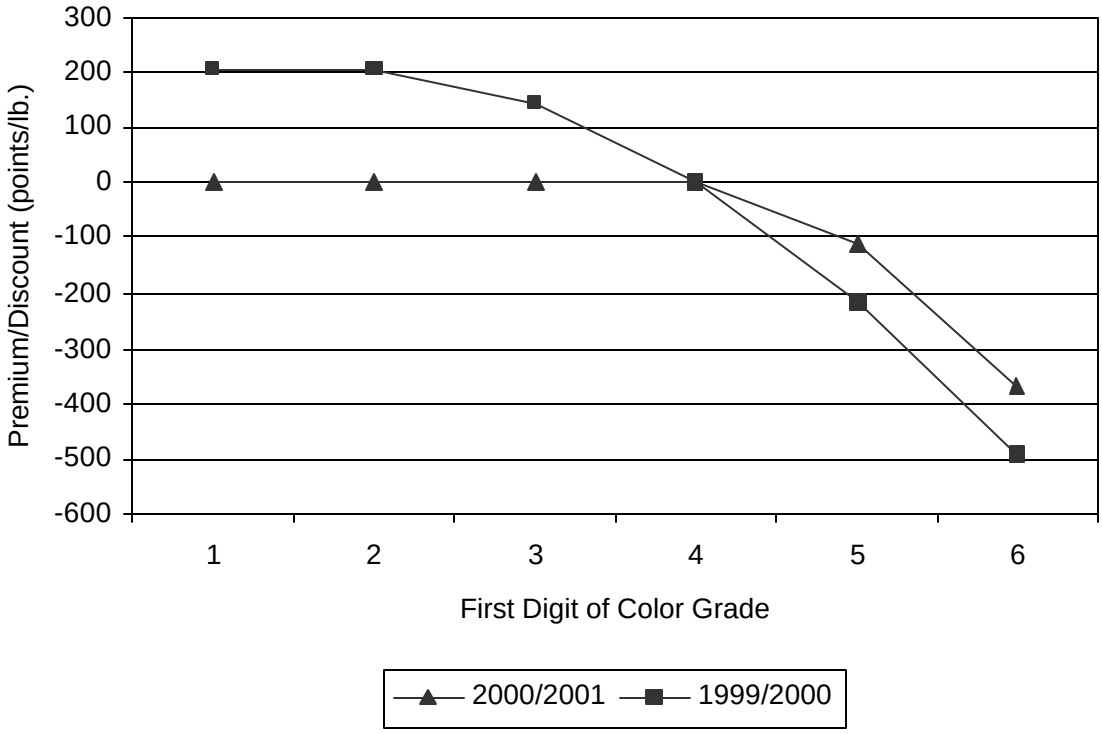


Figure 6: First Digit of the Color Grade Premiums/Discounts, 2000/2001 and 1999/2000, West Texas.

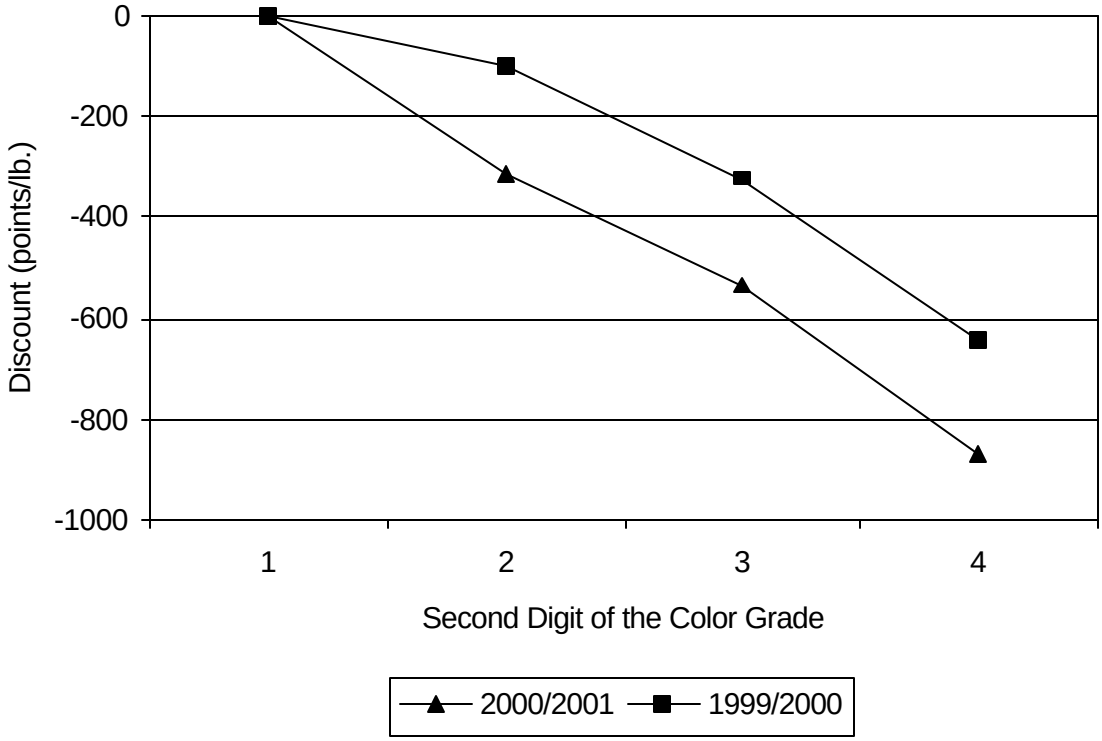


Figure 7: Second Digit of the Color Grade Discounts, 2001/2000 and 1999/2000, West Texas.

Staple

The discounts for staple length 33 in the 2000/2001 marketing year were as stable as those from the 1999/2000 marketing year. They exhibited a slight upward trend from December through January where fluctuations remained between 100 to 175 points/lb. (Figure 8).

Figure 9 illustrates that lower staple levels were discounted marginally less severely in the 2000/2001 marketing year than in the 1999/2000 year, while higher staple levels received slightly higher premiums than the previous year.

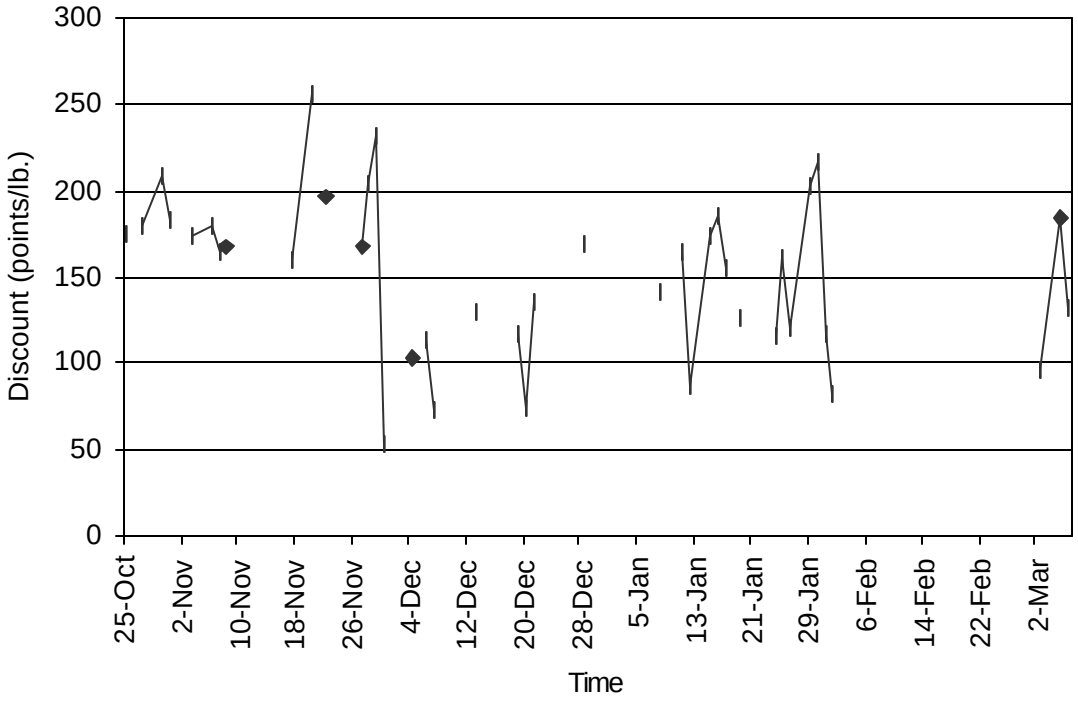


Figure 8: Staple Length 33 Discounts for the 2000/2001 Marketing Year, West Texas.

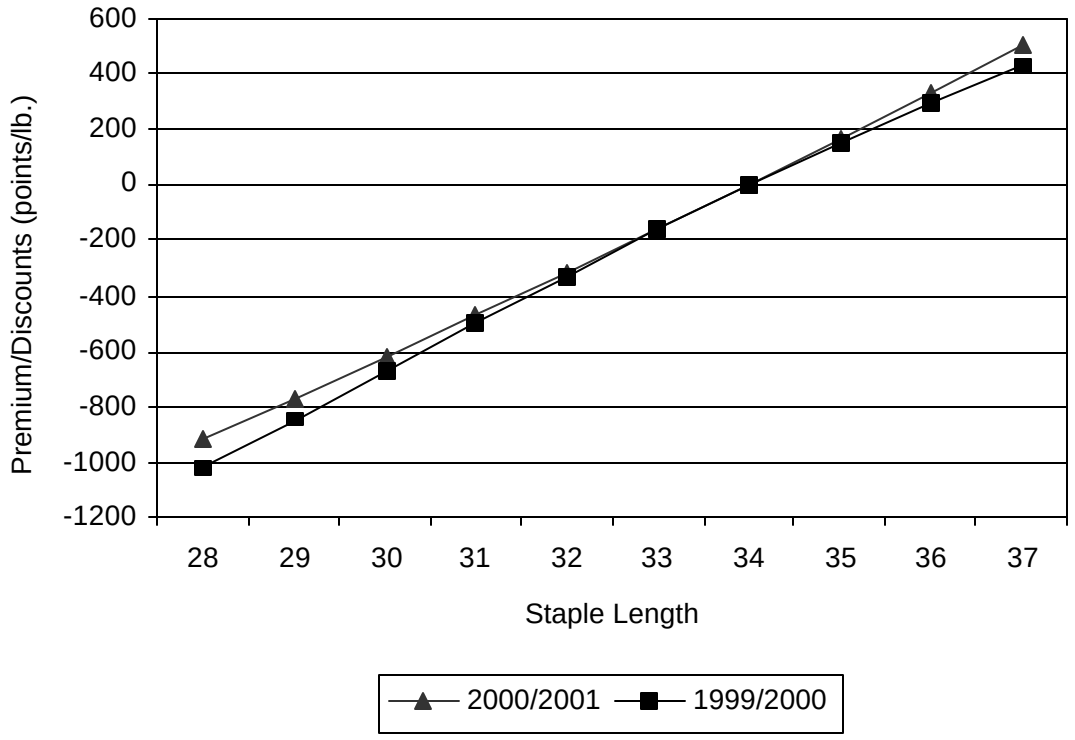
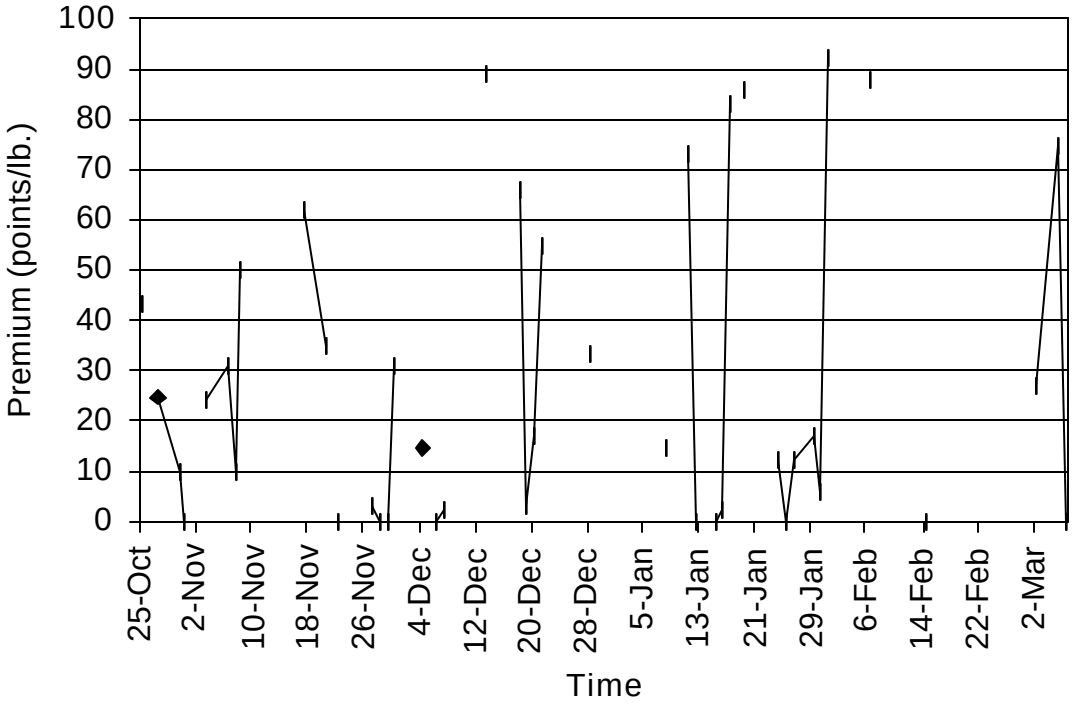


Figure 9: Staple Length Premiums/Discounts, 2000/2001 and 1999/2000, West Texas.

Strength

Figure 10 provides an illustration of the pattern of premiums for strength 29, which exhibited wide fluctuations during the 2000/2001 marketing year. There were few days during the 2000/2001 marketing year when strength did not have any impact on price (Figure 10). Figure 11 has been adjusted from the previous year because of the grading changes. Now that 27-28 grams/tex. is the base, 29 is the digit used for comparison. Lower levels of strength did not experience much change for discounts for the 2000/2001 marketing year, while higher levels of strength received lower premiums (Figure 11). This could indicate that the strength of the fiber was not of as much concern in the 2000/2001 marketing year as it was in the previous year.



.Figure 10: Strength 29 Premiums for the 2000/2001 Marketing Year, West Texas

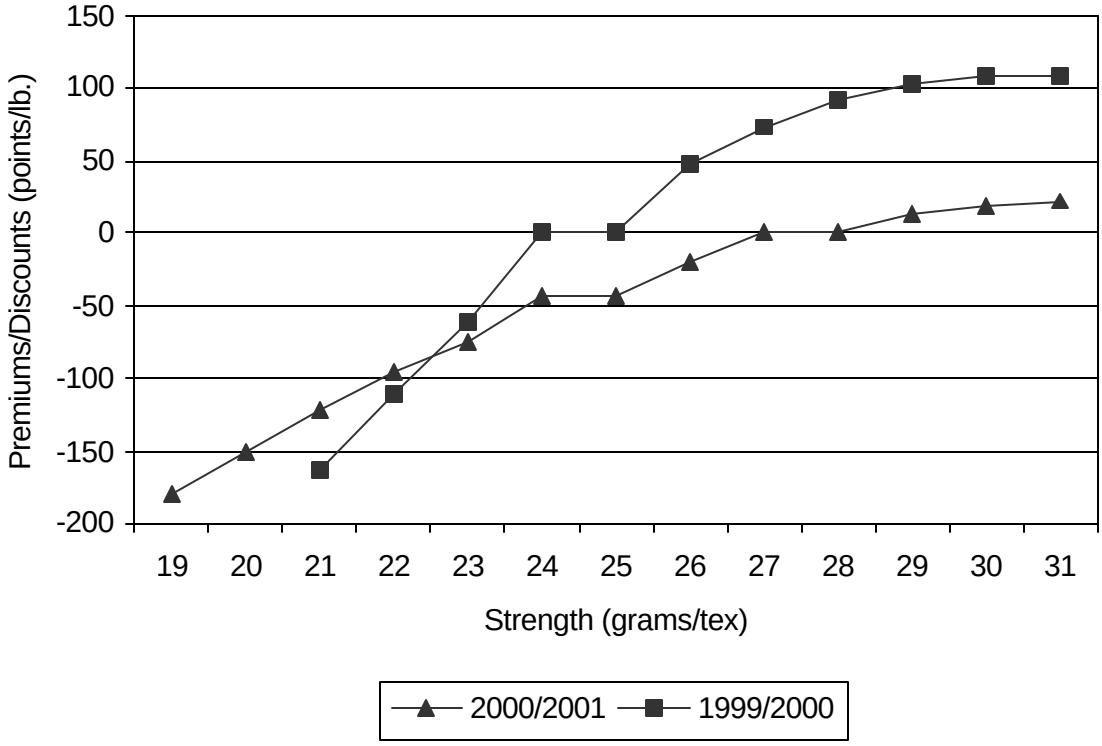


Figure 11: Strength Premiums/Discounts, 2000/2001 and 1999/2000, West Texas.

Micronaire

Discounts for micronaire 3.35 in 2000/2001 did not show quite as an erratic pattern to that of the previous year (Figure 12). The discounts remained mostly within a range of 100 to 250 points/lb., which is similar to the previous year. The discounts for low ranges of micronaire were relatively lower and discounts in the high ranges were about the same in the 2000/2001 marketing year compared to the previous year (Figure 13).

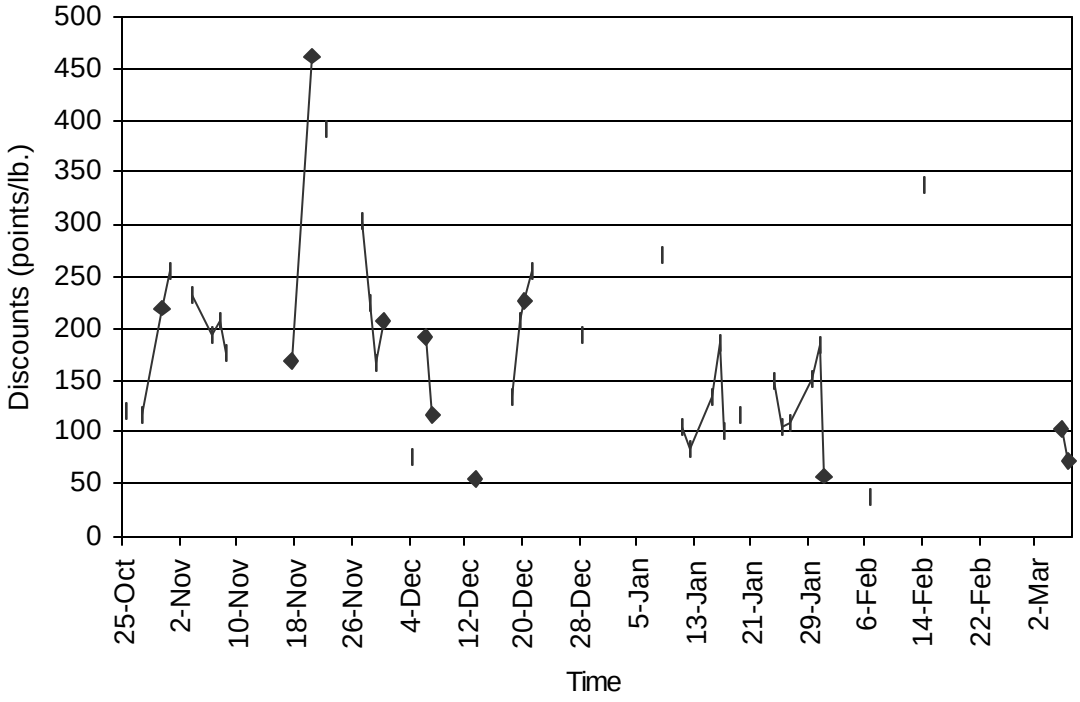


Figure 12: Micronaire 3.35 Discounts for the 2000/2001 Marketing Year, West Texas.

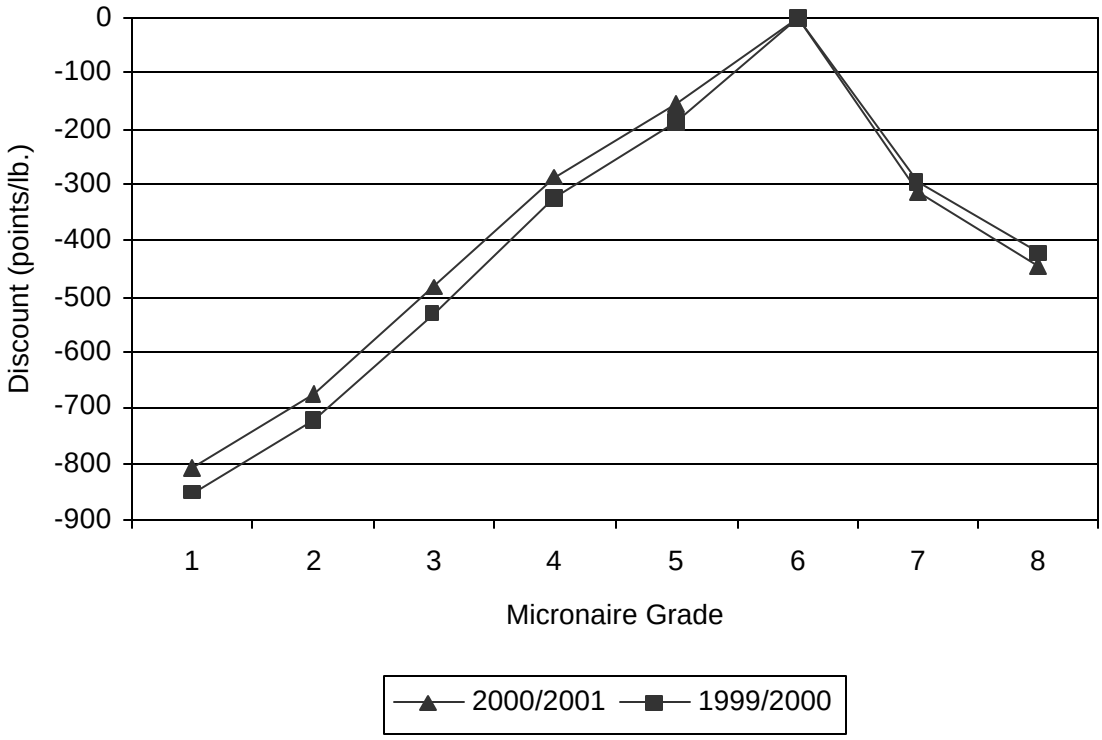


Figure 13: Micronaire Discounts, 2000/2001 and 1999/2000, West Texas.

Bark

Discounts for level 1 bark fluctuated widely throughout the year (Figure 14). The majority of the season's discounts fell between 50 and 250 points/lb., which are lower than the 1999/2000 marketing year. There were many days when the level of bark did affect the price. Figure 15 illustrates a comparison of level 1 and level 2 bark discounts between the 2000/2001 and 1999/2000 marketing years. The 2000 crop discounts for level 1 bark were slightly lower than during the previous year (Figure 15).

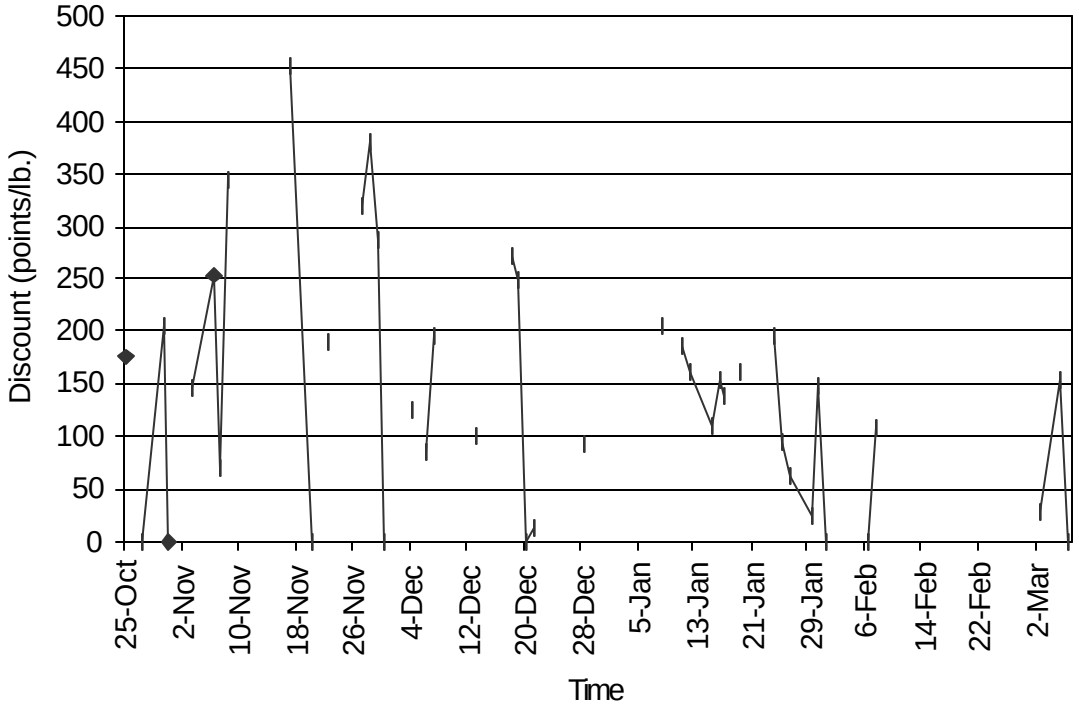


Figure 14: Level 1 Bark Discounts for the 2000/2001Marketing Year, West Texas.

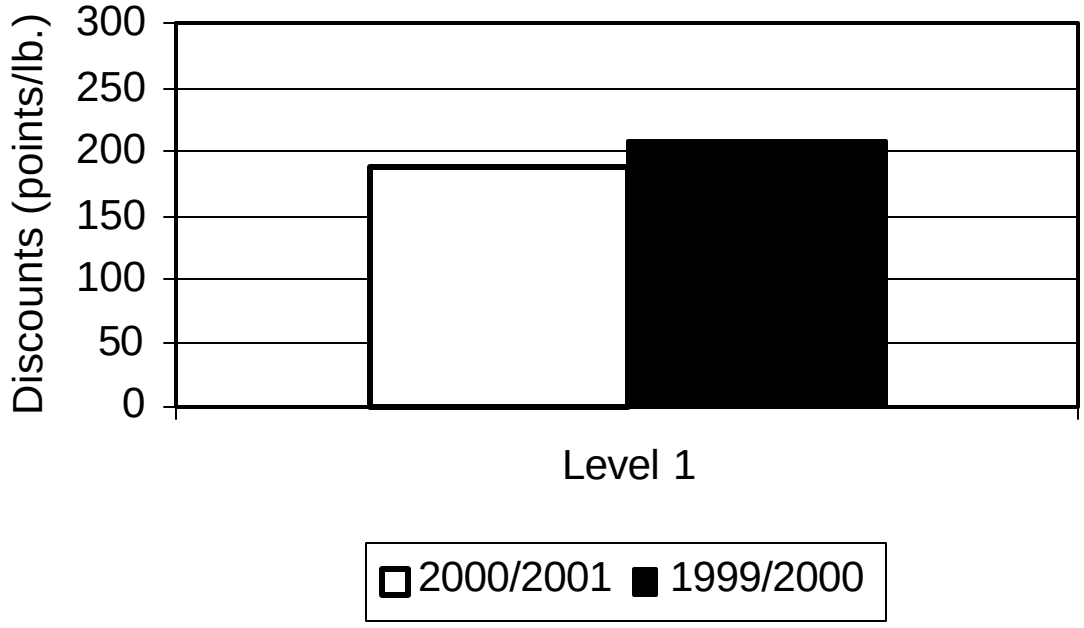


Figure 15: Bark Discounts, 2000/2001 and 1999/2000, West Texas.

Other extraneous matter

The average discount for level 1 other extraneous matter decreased from that of the previous year. The incidence of other extraneous matter was particularly low (below 1% of bales per lot for both levels), which makes it difficult to interpret and draw conclusions on the patterns of these attributes.

Uniformity and Preparation

During this marketing year, both the CCC loan schedule and daily spot market price reports published by the U.S. Department of Agriculture have been expanded to include two additional grades-length uniformity and preparation. The DPES has been adjusted to incorporate these new grades for the 2000/2001 marketing year. Due to this being the first year, there are no comparisons to be made with the previous year. Table 1 does though present the averages generated this year by the DPES for these new grades.

Summary

The average price for the 2000/2001 marketing year increased after a four-year decline. The average price increased by 13.08 cents/lb. to 50.90 cents/lb from the 1999/2000 marketing year. Although prices at the beginning of the 2000 season were above the level of the previous year's ending price, producer prices gradually decreased towards the end of the season, resulting in a sharp decline in sales and several periods of little to no market activity. The volume of producer spot market sales as recorded by the DPES showed a 74% decrease in 2000/2001 from the 1999/2000 marketing year. This may be due to an increase in the Texas/Oklahoma forward contracting, marketing pool participation, and producers holding bales over to the next season.

Overall, the 2000 crop for Texas and Oklahoma was similar to that of the previous year in quality. In comparison to the 1999/2000 marketing year, discounts decreased for all quality attributes except for the second digit of the color grade, while premium for leaf increased, premium for the first digit of the color grade decreased, and that of staple remained the same.

References

Brown, J.E. and D.E. Ethridge. "Functional Form Model Specification: An Application to Hedonic Pricing." *Agricultural and Resource Economics Review*. 24(2), Oct., 1995: 166-173.

Brown, J.E., D.E. Ethridge, D. Hudson, and C Engles. "An Automated Econometric Approach for Estimating and Reporting Daily Prices." *Journal of Agricultural and Applied Economics*. 27(2), Dec., 1995: 409-422.

Nelson, J., K. Hoelscher, D. Ethridge, and S. Misra. "Texas-Oklahoma Producer Cotton Market Summary: 1999/00." Department of Agricultural and Applied Economics, College of Agricultural Science and Natural Resources, Texas Tech University, CER-00-16, September 2000.

Texas Agricultural Statistics Service "Cotton and Cotton Seed: Acreage and Production." May 2001.

U.S. Department of Agriculture, National Agricultural Statistics Service, May 2001.

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:

$$P = b_0 e^{b_1 LF + b_2 LF^2 + b_3 RD + b_4 RD^2 + b_5 PB + b_6 UNI + b_7 STA + b_8 STA^2 + b_9 STR + b_{10} STR^2}$$

$$e^{b_{11} M + b_{12} M^2 + b_{13} LB + b_{14} LB^2 + b_{15} HB + b_{16} LO + b_{17} HO + b_{18} PA + b_{19} PB + b_{20} R}$$

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 2000/2001 marketing year. The procedures of Brown et al. (1995) indicated that this model specification best fits the 2000/2001 marketing year data. The parameters of the 2000/2001 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 2000/2001 Marketing Year Model. Dependent Variable = Log(Price)

Definition of the Variables	Variables	Parameters	Estimates
Constant Term		$\ln\beta_0$	-0.49923
Average leaf grade (1 through 7)	LF	β_1	-0.00805
Average leaf grade squared	LF^2	β_2	-0.00064
Average first digit of the color grade (1 through 7)	RD	β_3	0.04893
Average first digit of the color grade squared	RD^2	β_4	-0.0003
Average second digit of the color grade (1 through 4)	PB	β_5	-0.00812
Percentage uniformity length	UNI	β_6	0.00424
Average staple length (32nds of an inch)	STA	β_7	0.03727
Average staple length squared	STA^2	β_8	-0.00012
Average strength of the cotton (grams/tex)	STR	β_9	0.01456
Average strength squared	STR^2	β_{10}	-0.00023
Average micronaire reading	M	β_{11}	0.45496
Average micronaire squared	M^2	β_{12}	-0.05581
Percentage of bales classed as level 1 bark	LB	β_{13}	-0.01803
Percentage of bales classed as level 1 bark squared	LB^2	β_{14}	-0.01591
Percentage of bales classed as level 2 bark	HB	β_{15}	0.00
Percentage of bales classed as level 1 other extraneous matter	LO	β_{16}	-0.22126
Percentage of bales classed as level 2 other extraneous matter	HO	β_{17}	0.00
Percentage of bales classed as level 1 preparation	PA	β_{18}	-0.35004
Percentage of bales classed as level 2 preparation	PB	β_{19}	-0.01459
Region (R=0 for West Texas, R=1 for East Texas and Oklahoma)	R	β_{20}	0.00031