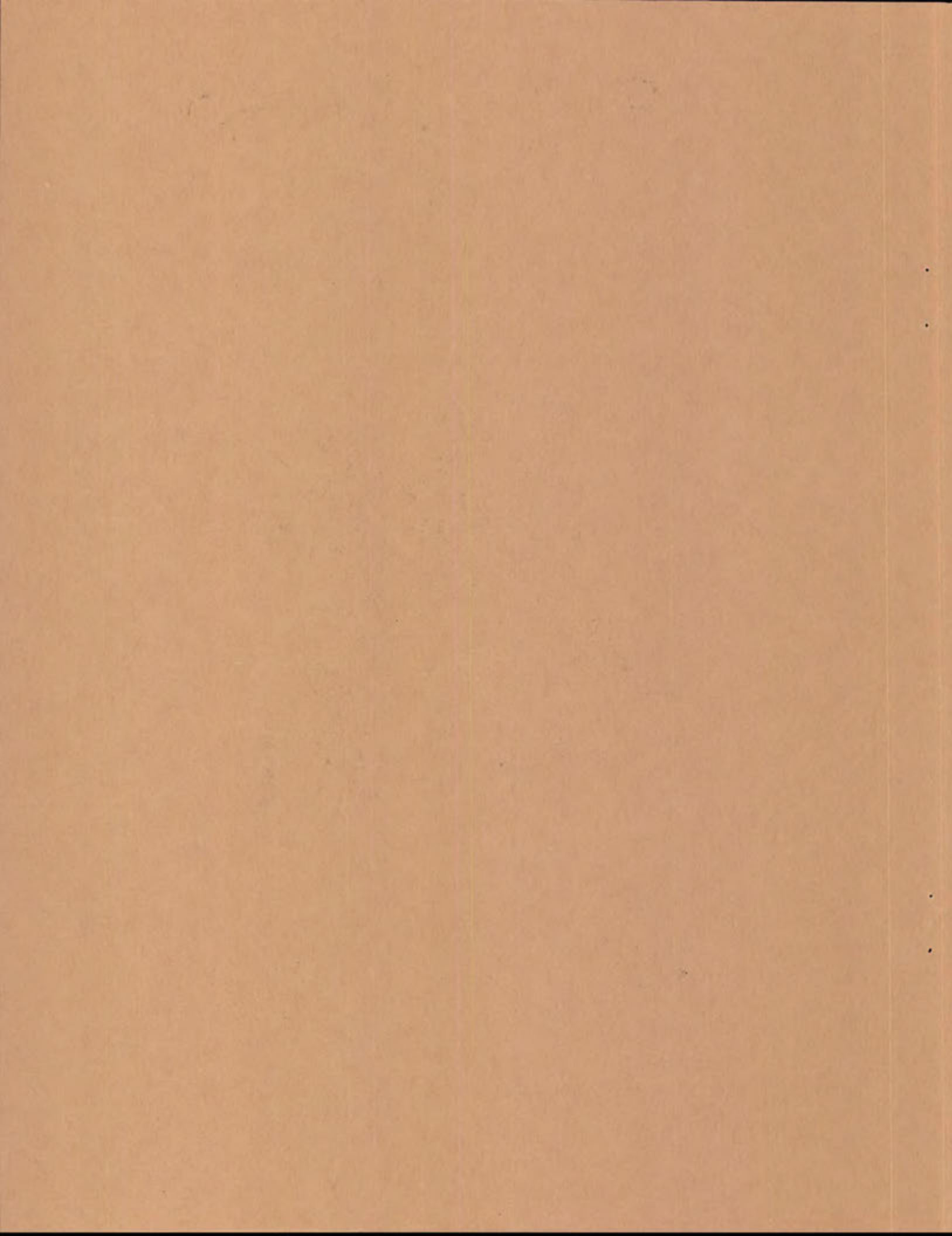


COTTONSEED QUALITY

CROP OF 1989



UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Marketing Service Cotton Division
Memphis, Tennessee
April 1990



Cottonseed Quality - 1989 Crop

Cottonseed from the 1989 crop averaged lower in grade than the previous year, according to the Cotton Division, Agricultural Marketing Service, USDA. The average grade was 98.6, down from 98.9 a year earlier and down from 100.2 in 1987. Foreign matter content, at 1.5 percent, was up from 1.3 percent the previous season and 1.6 percent in 1987. Average moisture content was 9.9 percent against 10.2 and 9.4 percent in 1988 and 1987, respectively. The percentage of free fatty acids in cottonseed from the 1989 crop averaged 0.7, down from 0.9 last year but up from 0.6 two years ago. The quality index was 98.9 against 98.6 a year ago and 98.9 two years earlier. Average oil content of cottonseed was 18.0 percent, up slightly from 17.9 in 1988 but down from 18.3 in 1987. Ammonia content averaged 3.96 against 4.02 last year and 4.06 two years ago. Average quantity index at 100.51, was the second highest since 1973, and compares with 99.96 in 1988 and 101.09 in 1987.

Data from grade certificates covering 24,301 samples of cottonseed were used to compile this report. Averages of cottonseed quality and quantity factors and grades are shown by states, when sufficient certificates were received, and by months. Average grade factors of cottonseed are shown by states in Table 3. The averages in this table are arithmetic means of grade factors and indexes tabulated and averaged from the individual grade certificates issued by chemists licensed by the U.S. Department of Agriculture.

Indicated 1989-crop cottonseed production is 4.77 million tons, according to the Agricultural Statistics Board, National Agricultural Statistics Service, USDA. This is 21 percent below 6.06 million tons produced in 1988 and 17 percent lower than 5.77 million tons in 1986.

The summary of national averages appearing in Table 1 below and presented in other tables of this report is based on state quality and quantity and grades weighted by the number of certificates received.

Table 1. Cottonseed: Average quality and quantity factors, indexes and grades, United States 1974-1989

Year beginning August 1	Quality factors - percent			Quality index	Quantity factors : percent		Quantity index	Average grade	Number of samples
	Foreign matter	Moisture	Free fatty acids		Oil	Ammonia			
1974	1.6	11.0	1.6	96.5	17.7	3.82	98.42	95.5	61,114
1975	1.6	10.6	1.4	97.0	18.0	3.75	99.50	96.5	44,250
1976	1.8	10.6	0.7	98.4	17.7	3.88	98.93	97.5	52,048
1977	1.4	10.8	1.8	95.6	17.5	3.99	98.85	94.5	61,466
1978	1.5	10.5	0.9	98.5	17.4	4.08	98.97	98.0	50,418
1979	1.7	10.3	1.0	97.7	17.6	3.92	98.92	97.0	56,792
1980	1.7	10.4	0.9	98.0	16.9	4.08	97.17	95.5	38,224
1981	2.0	10.1	0.8	98.1	17.2	3.97	97.69	96.0	50,636
1982	1.4	10.9	1.1	98.0	17.5	3.89	98.22	96.5	33,612
1983	1.6	11.0	0.7	98.4	17.0	4.02	97.12	96.0	24,549
1984	1.7	11.4	2.1	93.8	17.0	3.94	96.63	90.5	39,970
1985	1.4	10.8	1.4	96.4	17.3	3.94	97.72	94.6	35,586
1986	1.8	11.1	1.2	97.1	17.3	3.96	98.04	95.3	25,414
1987	1.6	9.4	0.6	98.9	18.3	4.06	101.09	100.2	33,210
1988	1.3	10.2	0.9	98.6	17.9	4.02	99.96	98.9	36,235
1989	1.5	9.9	0.7	98.9	18.0	3.96	100.51	99.6	24,301

STANDARDS FOR GRADES OF COTTONSEED SOLD OR OFFERED FOR SALE
FOR CRUSHING PURPOSES WITHIN THE UNITED STATES

Determination of grade. The grade of cottonseed shall be determined from the analysis of samples, and it shall be the result, stated in the nearest whole or half number, obtained by multiplying a quantity index by a quality index and dividing the result by 100. The quantity index and the quality index shall be determined as hereinafter provided:

- (a) The basis grade of cottonseed shall be grade 100.
- (b) High grades of cottonseed shall be those grades above 100.
- (c) Low grades of cottonseed shall be those grades below 100.

Determination of quantity index. The quantity index of cottonseed shall be determined as follows:

- (a) For upland cottonseed the quantity index shall equal 4 times the percentage of oil plus 6 times the percentage of ammonia plus 5.
- (b) For American Pima cottonseed the quantity index shall equal 4 times the percentage of oil plus 6 times the percentage of ammonia minus 10.

Determination of quality index. The quality index of cottonseed shall be an index of purity and soundness, and shall be determined as follows:

- (a) Prime quality cottonseed. Cottonseed that by analysis contain not more than 1.0 percent of foreign matter, not more than 12.0 percent of moisture, and not more than 1.8 percent free fatty acids in the oil in the seed, shall be known as prime quality cottonseed and shall have quality index of 100.
- (b) Below prime quality cottonseed. The quality index of cottonseed that by analysis contain foreign matter, moisture, or free fatty acids in the oil in the seed, in excess of the percentage prescribed in (a) above shall be found by reducing the quality index of prime quality cottonseed as follows:
 - (1) Four-tenths of a unit for each 0.1 percent of free fatty acids in oil in the seed in excess of 1.8 percent.
 - (2) One-tenth of a unit for each 0.1 percent of foreign matter in excess of 1.0 percent.
 - (3) One-tenth of a unit for each 0.1 percent of moisture in excess of 12.0 percent.
- (c) Off quality cottonseed. Cottonseed that has been treated by either mechanical or chemical process other than the usual cleaning, drying and ginning (except sterilization required by United States Department of Agriculture for quarantine purposes) or that are fermented or hot, or that upon analysis are found to contain 12.5 percent or more of free fatty acids in the oil in the seed, or more than 10.0 percent of foreign matter, or more than 20.0 percent of moisture, or more than 25.0 percent of moisture and foreign matter combined shall be designated as "off quality" cottonseed.
- (d) Below Grade cottonseed. Cottonseed the grade of which when calculated according to the foregoing is below grade 40.0 shall be designated as "Below Grade" cottonseed and a numerical grade shall not be indicated.

Table 2. Examples of the computation of cottonseed quality and quantity indexes and grades, by qualities, in accordance with the official standards of the United States 1/

Example 2/	Quality Factors				Quantity Factors				Grade				
	FFA 3/	FM 4/	H2O 5/	Total : :reduc- :Quality:	Oil :	NHS 8/	:Sum of: Adjust-: Quan-:	ment : tity :					
	Total: Reduction:	Total: Reduction:	Total: Reduction:	index : Total: Product 6/:	index : Total: Product 7/:	Total: Product 7/:	ucts : factors:	index:					
	Pct.	Units	Pct.	Units	Pct.	Units	Pct.						
	PRIME QUALITY SEED												
1	0.5	0.0	0.3	0.0	10.0	0.0	76.0	3.60	21.60	97.50	+5	102.60	102.5
2	1.8	0.0	1.0	0.0	12.0	0.0	71.2	4.10	24.60	95.80	+5	100.80	101.0
3	1.2	0.0	0.8	0.0	9.6	0.0	64.8	3.97	23.82	88.62	+5	93.62	93.5
	BELOW PRIME QUALITY SEED												
4	<u>1.9</u>	0.4	1.0	0.0	12.0	0.0	74.0	3.50	21.00	95.00	+5	100.00	99.5
5	1.8	0.0	<u>1.1</u>	0.1	12.0	0.0	78.8	3.75	22.50	101.30	+5	106.30	106.0
6	1.8	0.0	1.0	0.0	<u>12.1</u>	0.1	69.2	4.23	25.38	94.58	+5	99.58	99.5
7	1.9	0.4	1.1	0.1	<u>12.1</u>	0.1	63.2	2.98	17.88	81.08	+5	86.08	85.5
8	2.5	2.8	3.2	2.2	7.4	0.0	98.8	4.15	24.90	123.70	-10	113.70	108.0 AP
	OFF QUALITY SEED												
	Treated (other than usual), Fermented, Hot												
9	<u>12.5</u>	42.8	0.7	0.0	12.0	0.0	80.4	3.67	22.02	102.42	+5	107.42	61.5
10	1.8	0.0	<u>10.1</u>	9.1	12.0	0.0	67.6	4.13	24.78	92.38	+5	97.38	88.5
11	1.8	0.0	1.0	0.0	<u>20.1</u>	8.1	75.2	3.80	22.80	98.00	+5	103.00	94.5
12	1.8	0.0	<u>15.8</u>	14.8	11.1	0.0	77.2	4.08	24.48	101.68	+5	106.68	91.0
13	4.6	11.2	<u>11.5</u>	10.5	9.2	0.0	65.6	4.32	25.92	91.52	+5	96.52	75.5
	BELOW GRADE SEED												
14	10.5	34.8	20.8	19.8	15.6	3.6	68.0	3.41	20.46	88.46	+5	93.46	86+
15	17.5	62.8	0.5	0.0	14.1	2.1	78.0	3.94	23.64	101.64	+5	106.64	86+

1/ Important key figures that determine the range of various qualities of cottonseed are underscored.

2/ Example "8", demonstration of application of grading system on American Pima seed; all others relate to upland cottonseed.

3/ Free fatty acids in the oil in the seed.

4/ Foreign matter in the seed.

5/ Moisture in the seed.

6/ Reductions are the adjustments made in the quality index for excesses of free fatty acids, foreign matter, and moisture above or below tolerances.

7/ "Products" are percentages of oil and ammonia in the seed multiplied by the factor used in computing the quantity index.

8/ Ammonia in the seed.

* Below grade 40. No numerical grade is indicated.

Table 3. Cottonseed: Average quality and quantity factors, indexes and grades, by states and United States, 1988 and 1989

State	Quality factors - percent				Quantity factors - percent			Average grade								
	Foreign matter	Moisture	Free fatty acids	Quality index	Oil	Ammonia	Quantity index									
	1988 : 1989	1988 : 1989	1988 : 1989	1988 : 1989	1988 : 1989	1988 : 1989	1988 : 1989	1988 : 1989								
AL	1.1	1.2	10.9	1.8	1.3	97.1	97.8	17.1	17.9	4.02	3.95	97.65	100.36	94.8	99.1	
AR	0.9	1.0	11.7	11.3	0.8	0.8	99.1	99.4	17.0	17.8	3.86	3.89	96.20	99.31	95.4	98.8
GA	0.9	0.5	10.8	11.0	2.3	1.6	96.7	99.2	18.1	18.0	4.02	3.94	101.45	100.58	98.1	99.8
LA	0.8	0.8	11.6	11.9	1.5	0.6	98.5	99.4	17.2	17.5	3.88	3.89	95.17	98.50	93.8	98.2
MS	0.8	1.0	11.7	11.1	1.5	1.1	98.0	99.3	16.5	17.5	3.97	3.86	94.83	98.18	93.1	97.5
MO	1.4	1.4	12.3	11.3	1.0	0.7	97.7	99.2	17.2	17.6	3.68	3.92	96.00	98.80	94.5	98.1
NM	1.6	1.9	8.0	7.2	0.4	0.5	99.2	98.9	19.6	19.1	3.91	4.05	106.86	104.20	106.0	103.1
NC	1.2	1.1	10.8	11.3	1.3	0.7	98.8	99.9	18.1	18.3	4.03	3.86	101.58	101.13	100.4	101.0
OK	1.7	4.5	9.3	7.8	0.4	0.5	99.1	98.3	19.1	19.0	4.05	3.98	105.72	104.89	104.8	101.3
SC	0.9	1.5	10.7	10.3	2.9	1.0	95.3	99.4	18.2	18.7	4.18	3.97	102.92	103.54	97.8	102.9
TN	1.1	1.3	12.5	11.3	0.9	0.7	98.7	99.1	17.8	18.7	3.77	3.87	98.52	103.06	97.3	102.1
TX	1.8	2.3	8.0	7.5	0.4	0.5	99.1	98.5	19.1	18.4	4.21	4.07	104.87	102.71	104.6	101.3
Other	0.7	1.0	12.0	12.7	2.9	1.5	94.2	98.7	16.4	17.5	3.69	4.09	92.91	96.20	87.5	95.1
U.S.	1.3	1.5	10.2	9.9	0.9	0.7	98.6	98.9	17.9	18.0	4.02	3.96	99.96	100.51	98.9	99.6

Table 4. Cottonseed: Average quality and quantity factors, indexes and grades, by specified periods and states, 1989

Month	Quality factors - percent			Quantity factors - percent			Average grade	Number of samples	
	Foreign matter	Moisture	Free fatty acids	Quality index	Oil	Ammonia			Quantity index
ALABAMA									
Sept.	0.4	9.4	0.8	100.0	18.2	4.03	101.78	102.0	2
Oct.	0.7	11.4	0.7	99.6	17.6	3.94	99.08	98.7	145
Nov.	1.0	10.6	1.0	97.1	18.2	3.98	101.68	101.3	356
Dec.	1.5	11.2	1.0	99.3	18.2	3.90	100.56	99.9	145
Jan.	1.4	11.0	1.9	97.6	17.7	3.92	99.56	97.3	25
Feb.	2.0	12.0	2.2	96.2	17.1	3.98	97.24	93.6	6
Mar. & Later	1.5	10.7	2.5	95.6	17.6	4.06	99.88	95.6	4
Season	1.2	10.9	1.3	97.8	17.9	3.95	100.36	99.1	683
ARKANSAS									
Sept.	0.7	12.8	0.4	98.9	16.9	3.96	96.28	95.2	154
Oct.	0.7	11.7	0.7	99.4	20.3	3.92	98.51	98.0	1,171
Nov.	1.0	11.0	0.8	99.6	18.2	3.87	100.92	100.5	1,566
Dec.	1.4	11.3	0.8	99.1	17.2	3.80	97.04	96.0	249
Jan.	1.3	11.0	0.6	99.1	17.1	3.75	95.83	95.2	51
Feb.	1.4	10.5	0.9	99.5	17.7	3.87	99.04	98.5	21
Mar. & Later	1.5	10.9	1.2	99.0	17.9	3.92	100.06	99.1	18
Season	1.0	11.3	0.8	99.4	17.8	3.89	99.31	98.8	3,230
GEORGIA									
Sept.	0.8	11.4	3.6	92.8	16.1	3.80	92.20	85.5	1
Oct.	0.5	11.1	1.6	99.7	17.9	3.95	100.47	100.2	19
Nov.	0.5	10.3	1.3	99.9	18.4	3.99	102.37	102.2	55
Dec.	0.4	12.6	1.4	99.1	18.4	3.81	101.46	100.5	17
Jan.	0.6	13.0	2.0	97.7	16.4	3.70	92.80	90.5	1
Feb.	0.3	12.7	2.6	96.1	16.7	3.78	94.48	91.0	1
Mar. & Later	-	-	-	-	-	-	-	-	-
Season	0.5	11.0	1.6	99.2	18.0	3.94	100.58	99.8	94

Table 4. Cottonseed: Average quality and quantity factors, indexes and grades, by specified periods and states, 1989 (Continued)

Month	Quality factors - percent			Quantity factors - percent			Quantity index	Average grade	Number of samples
	Foreign matter	Moisture	Free fatty acids	Oil	Ammonia	Quantity index			
LOUISIANA									
Sept.	0.7	10.6	0.7	16.9	3.79	95.28	94.5	168	
Oct.	0.8	10.8	0.5	17.4	3.84	97.57	97.3	1,278	
Nov.	0.8	9.8	0.6	17.8	3.94	99.70	99.3	769	
Dec.	0.8	10.4	0.7	17.8	3.92	99.50	99.4	136	
Jan.	0.6	9.8	0.6	17.8	3.92	99.83	99.8	66	
Feb.	0.7	31.9	0.8	17.9	3.98	100.34	100.3	128	
Mar. & Later	0.6	9.4	0.5	17.9	4.09	101.33	101.3	9	
Season	0.8	11.9	0.6	17.5	3.89	98.50	98.2	2,554	
MISSISSIPPI									
Sept.	1.3	12.7	1.2	16.5	3.85	94.20	91.8	48	
Oct.	0.8	11.4	1.1	18.1	3.87	98.02	97.4	2,070	
Nov.	1.0	10.9	1.1	17.6	3.88	99.56	99.2	2,995	
Dec.	1.1	11.2	1.0	17.3	3.77	96.96	96.5	726	
Jan.	9.9	11.3	0.8	16.8	3.71	94.31	93.8	186	
Feb.	1.6	10.4	1.2	16.3	3.84	93.31	92.2	18	
Mar. & Later	4.1	10.9	2.4	16.7	4.00	95.96	89.7	11	
Season	1.0	11.1	1.1	17.5	3.86	98.18	97.5	6,054	
MISSOURI									
Sept.	1.2	11.9	0.9	16.9	3.88	95.47	94.5	61	
Oct.	1.0	11.4	0.6	17.6	3.93	98.99	98.6	501	
Nov.	1.5	11.0	0.7	17.8	3.91	99.74	99.1	273	
Dec.	2.2	11.3	0.7	17.6	3.90	98.86	97.3	40	
Jan.	0.8	9.9	0.7	17.9	4.03	100.91	101.0	3	
Feb.	2.4	12.4	2.4	16.2	3.83	92.75	89.0	2	
Mar. & Later	-	-	-	-	-	-	-	-	
Season	1.4	11.3	0.7	17.6	3.92	98.80	98.1	880	

Table 4. Cottonseed: Average quality and quantity factors, indexes and grades, by specified periods and states, 1989 (Continued)

Month	Quality factors - percent			Quantity factors - percent			Quantity index	Average grade	Number of samples
	Foreign matter	Moisture	Free fatty acids	Quality index	Oil	Ammonia			
NEW MEXICO									
Sept.	0.5	9.1	0.3	100.0	18.8	4.04	104.44	104.5	1
Oct.	0.6	8.2	0.3	99.9	19.4	3.92	106.11	106.0	16
Nov.	1.9	6.6	0.5	99.1	19.2	4.06	104.02	103.0	23
Dec.	3.5	6.8	0.8	98.3	19.0	4.22	104.35	101.9	8
Jan.	2.9	6.3	0.4	98.2	18.5	3.97	102.82	101.0	2
Feb.	7.6	11.9	1.2	93.4	19.0	4.11	90.66	84.5	1
Mar. & Later	-	-	-	-	-	-	-	-	-
Season	1.9	7.2	0.5	98.9	19.1	4.05	104.20	103.1	50
NORTH CAROLINA									
Sept.	-	-	-	-	-	-	-	-	-
Oct.	1.1	11.3	0.7	99.9	18.3	3.86	101.13	101.0	4
Nov.	-	-	-	-	-	-	-	-	-
Dec.	-	-	-	-	-	-	-	-	-
Jan.	-	-	-	-	-	-	-	-	-
Feb.	-	-	-	-	-	-	-	-	-
Mar. & Later	-	-	-	-	-	-	-	-	-
Season	1.1	11.3	0.7	99.9	18.3	3.86	101.13	101.0	4
OKLAHOMA									
Sept.	-	-	-	-	-	-	-	-	-
Oct.	2.2	7.6	0.3	98.8	17.8	4.02	100.32	99.0	1
Nov.	5.1	7.9	0.5	98.2	19.3	3.96	106.03	101.9	4
Dec.	-	-	-	-	-	-	-	-	-
Jan.	-	-	-	-	-	-	-	-	-
Feb.	-	-	-	-	-	-	-	-	-
Mar. & Later	-	-	-	-	-	-	-	-	-
Season	4.5	7.8	0.5	98.3	19.0	3.98	104.89	101.3	5
SOUTH CAROLINA									
Sept.	-	-	-	-	-	-	-	-	-
Oct.	1.5	10.3	1.0	98.4	18.7	3.97	103.54	102.9	4
Nov.	-	-	-	-	-	-	-	-	-
Dec.	-	-	-	-	-	-	-	-	-
Jan.	-	-	-	-	-	-	-	-	-
Feb.	-	-	-	-	-	-	-	-	-
Mar. & Later	-	-	-	-	-	-	-	-	-
Season	1.5	10.3	1.0	99.4	18.7	3.97	103.54	102.9	4

Table 4. Cottonseed: Average quality and quantity factors, indexes and grades, by specified periods and states, 1989 (Continued)

Month	Quality factors - percent			Quantity factors - percent			Quantity index	Average grade	Number of samples
	Foreign matter	Moisture	Free fatty acids	Quality index	Oil	Ammonia			
TENNESSEE									
Sept.	1.4	12.6	1.0	98.0	17.7	3.72	98.01	96.0	30
Oct.	0.6	12.3	0.7	99.3	20.4	3.87	101.60	100.9	647
Nov.	1.2	11.1	0.7	99.4	19.1	3.89	104.60	104.0	907
Dec.	2.4	11.0	0.8	98.4	18.5	3.89	102.39	100.9	148
Jan.	2.3	10.6	1.0	97.8	18.3	3.84	101.28	99.0	23
Feb.	2.4	10.5	0.7	98.5	18.3	3.85	101.45	99.9	12
Mar. & Later	4.0	10.9	1.0	97.0	19.3	3.77	104.82	101.8	2
Season	1.3	11.3	0.7	99.1	18.7	3.87	103.06	102.1	1,769
TEXAS									
Aug.	0.8	9.5	0.4	99.8	17.9	4.06	100.92	108.5	1,157
Sept.	0.7	9.6	0.7	99.8	17.6	4.06	99.27	99.1	323
Oct.	1.7	7.6	0.4	99.1	18.1	4.04	101.15	100.2	662
Nov.	2.5	6.9	0.5	98.3	18.7	4.16	103.92	102.4	4,190
Dec.	2.8	7.1	0.5	98.2	18.5	3.96	102.89	101.0	2,216
Jan.	3.6	8.0	0.6	97.3	17.7	3.85	98.94	96.4	277
Feb.	4.3	8.1	0.8	96.7	18.3	3.85	99.83	96.6	64
Mar. & Later	2.5	8.5	1.1	98.3	18.3	3.96	102.00	100.3	8
Season	2.3	7.5	0.5	98.5	18.4	4.07	102.71	101.3	8,897
OTHER STATES									
Sept.	-	-	-	-	-	-	-	-	-
Oct.	0.4	11.5	1.1	99.5	16.7	4.06	94.86	94.4	13
Nov.	1.0	10.4	1.4	99.4	17.6	4.10	97.40	96.8	33
Dec.	1.4	26.9	1.7	97.8	18.4	4.03	97.02	94.8	24
Jan.	1.2	12.9	3.6	91.9	14.6	3.89	86.71	79.8	2
Feb.	2.0	8.8	1.6	96.6	18.8	4.09	92.64	90.0	5
Mar. & Later	-	-	-	-	-	-	-	-	-
Season	1.0	12.7	1.5	98.7	17.5	4.09	96.20	95.1	77