

# **COTTONSEED QUALITY**

## **CROP OF 1996**



**UNITED STATES DEPARTMENT OF AGRICULTURE**

**Agricultural Marketing Service - Cotton Division**

**Memphis, Tennessee**

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## Cottonseed Quality - 1996 Crop

Cottonseed from the 1996 crop averaged the highest in grade since 1966, according to the Cotton Division, Agricultural Marketing Service, USDA. The average grade was 100.7, up from 99.1 in 1995, and 97.1 in 1994. Foreign matter content was 1.1 percent in 1996. This was the same as last year, and two years earlier. Average moisture content was 10.2 percent against 9.8 in 1995 and 10.5 in 1994. The percentage of free fatty acids in cottonseed from the 1996 crop averaged 0.9, up from 0.6 in 1995, but was down slightly from 1.0 in 1994. The quality index was 99.1, this compares to 99.4 in 1995 and 98.3 in 1994. Average oil content of cottonseed was 18.1 percent, up slightly from 17.8 in 1995 and 1994. Ammonia content averaged 3.92 against 3.98 last year and 3.80 two years ago. Average quantity index at 100.78 compares with 99.80 last year and 99.81 in 1994.

Data from grade certificates covering 14,444 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 1996-crop cottonseed production was 7.27 million tons, according to the Agricultural Statistics Board, National Agricultural Statistics Service, USDA. This was up from 6.85 million tons produced in 1995, but down from 7.60 million tons in 1994.

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 1981-1996

Year 1/	Quality factors percent			Quality index	Quantity factors percent		Quantity index	Average grade	Number of Samples
	Foreign matter	Moisture	Free fatty acids		Oil	Ammonia			
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
1990	1.3	10.1	0.8	98.9	17.4	4.09	99.00	97.9	30,350
1991	1.6	10.2	0.8	98.6	18.0	3.92	100.45	99.1	32,978
1992	1.3	10.5	0.8	99.3	17.5	3.68	97.28	96.3	27,292
1993	1.5	9.7	0.6	98.3	17.7	3.85	98.53	97.4	21,867
1994	1.1	10.5	1.0	98.3	17.8	3.80	98.81	97.1	21,877
1995	1.1	9.8	0.6	99.4	17.8	3.98	99.80	99.1	14,169
1996	1.1	10.2	0.9	99.1	18.1	3.92	100.78	100.7	14,444



STANDARDS FOR GRADES OF COTTONSEED SOLD FOR 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										Quality factors					Grade		
	FFA 3/		FM 4/		H2O 5/		Total reduction 6/		Quality index		Oil		NH3 8/		Sum of products		Adjustment factors	Quantity index
	Pct.	Units	Total : Reduction	Pct.	Units	Total : Reduction	Pct.	Units	Total : Reduction	Pct.	Units	Total : Reduction	Pct.	Units	Total : Product 7/			
1	0.5	0.0	0.3	0.0	0.0	10.0	0.0	0.0	PRIME QUALITY SEED	76.0	3.60	21.60	+5	97.50	+5	102.60	102.5	
2	1.8	0.0	1.0	0.0	0.0	12.0	0.0	0.0	100.0	19.0	4.10	24.60	+5	95.80	+5	100.80	101.0	
3	1.2	0.0	0.8	0.0	0.0	9.6	0.0	0.0	100.0	17.8	64.8	23.82	+5	88.62	+5	93.62	93.5	
4	1.0	0.4	1.0	0.0	0.0	12.0	0.0	0.0	BELOW PRIME QUALITY SEED	74.0	3.50	21.00	+5	95.00	+5	100.00	99.5	
5	1.8	0.0	1.1	0.1	0.0	12.0	0.0	0.1	99.6	18.5	78.8	22.50	+5	101.30	+5	106.30	106.0	
6	1.8	0.0	1.0	0.0	0.1	12.1	0.1	0.1	99.9	19.7	69.2	25.38	+5	94.58	+5	99.58	99.5	
7	1.9	0.4	1.1	0.1	0.1	12.1	0.1	0.6	99.4	17.3	63.2	17.88	+5	81.08	+5	86.08	85.5	
8	2.5	2.8	3.2	2.2	0.0	7.4	0.0	5.0	95.0	24.7	98.8	24.90	-10	123.70	-10	113.70	108.0 AP	
9	12.5	42.8	0.7	0.0	0.0	12.0	0.0	42.8	OFF QUALITY SEED	80.4	3.67	22.02	+5	102.42	+5	107.42	61.5	
10	1.8	0.0	1.0	9.1	0.0	12.0	0.0	9.1	57.2	20.1	67.6	24.78	+5	92.38	+5	97.38	88.5	
11	1.8	0.0	1.0	0.0	8.1	20.1	8.1	8.1	90.9	16.9	75.2	22.80	+5	98.00	+5	103.00	94.5	
12	1.8	0.0	1.0	14.8	0.0	11.1	0.0	14.8	85.2	19.3	77.2	24.48	+5	101.68	+5	106.68	91.0	
13	4.6	11.2	11.5	10.5	9.2	9.2	0.0	21.7	78.3	16.4	65.6	25.92	+5	91.52	+5	96.52	75.5	
14	10.5	34.8	20.8	19.8	3.6	15.6	3.6	58.2	BELOW GRADE SEED	68.0	3.41	20.46	+5	88.46	+5	93.46	86*	
15	17.5	62.8	0.5	0.0	2.1	14.1	2.1	64.9	41.8	17.0	78.0	23.64	+5	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 of 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, 1995 and 1996

State	Quality factors - percent		Free fatty acids		Moisture		Oil		Ammonia		Quantity index	Average grade				
	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996						
AL	0.8	0.5	11.4	10.8	1.6	1.9	98.6	98.6	17.2	18.0	3.95	3.81	97.61	99.99	96.3	98.5
AR	0.9	0.9	10.5	11.7	0.5	0.7	99.8	99.6	17.5	17.2	4.38	3.93	97.92	97.31	97.7	96.9
GA	0.6	0.5	11.0	10.1	1.9	1.9	98.5	98.8	17.6	18.0	3.92	3.89	98.73	101.19	97.2	100.0
LA	0.7	0.7	9.6	11.0	0.8	1.7	99.7	98.9	17.7	18.1	3.88	3.79	99.05	99.97	98.7	98.9
MS	0.4	0.4	9.6	11.2	0.5	0.9	100.0	99.8	17.7	17.7	4.01	3.85	99.96	98.85	99.9	98.7
MO	0.9	0.0	10.6	11.8	0.5	0.6	99.8	99.4	17.6	17.3	3.78	3.83	98.17	97.18	98.0	96.6
NM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OK	2.5	2.1	8.6	9.3	0.4	0.6	98.5	98.8	18.3	18.9	3.94	3.82	102.00	103.19	100.5	102.2
SC	-	0.8	-	9.8	-	1.6	-	100.0	-	18.3	-	3.71	-	100.23	-	100.3
TN	0.8	0.8	11.0	11.9	0.5	0.7	99.7	99.4	18.2	17.9	3.66	3.82	99.84	99.64	99.5	99.1
TX	1.7	1.9	8.7	8.2	0.5	0.6	99.1	98.8	18.1	18.8	4.02	4.06	101.32	104.22	100.2	105.5
OTHER	0.4	0.0	11.4	9.9	2.1	2.0	98.4	97.0	16.7	18.6	3.83	3.83	94.92	102.27	93.3	99.3
U.S.	1.1	1.1	9.8	10.2	0.6	0.9	99.4	99.1	17.8	18.1	3.98	3.92	99.80	100.78	99.1	100.7



Table 4. Cottonseed: Average quality and quantity factors, indexes and grades, by specified periods and states, 1996

Month	Quality factors - percent			Quantity factors - percent			Average grade	Number of samples
	Foreign matter	Moisture	Free fatty acids	Quality index	Oil	Ammonia		
ALABAMA								
Sept. & Earlier	-	-	-	-	-	-	-	-
Oct.	0.5	10.8	1.9	98.4	18.1	3.95	101.10	99.5
Nov.	0.5	10.3	2.1	98.1	18.0	3.76	99.60	97.7
Dec.	0.5	10.9	1.7	99.7	18.1	3.76	100.02	99.8
Jan.	0.6	11.4	2.0	98.5	17.8	3.73	98.67	97.1
Feb.	0.3	12.5	1.8	99.5	18.1	3.68	99.48	99.0
Mar. & Later	-	-	-	-	-	-	-	-
Season	0.5	10.8	1.9	98.6	18.0	3.81	99.99	98.5
ARKANSAS								
Sept. & Earlier	-	-	-	-	-	-	-	-
Oct.	0.9	11.6	0.5	99.6	17.2	3.98	97.57	97.2
Nov.	0.9	11.8	0.6	99.6	17.1	3.84	96.59	96.2
Dec.	0.7	11.5	1.0	99.7	17.3	3.95	98.00	97.7
Jan.	0.9	11.8	1.4	99.7	17.2	3.91	97.23	97.0
Feb.	1.5	14.3	2.5	94.4	17.0	3.62	94.72	89.5
Mar. & Later	0.2	12.1	0.9	99.9	16.3	4.02	94.32	94.0
Season	0.9	11.7	0.7	99.6	17.2	3.93	97.31	96.9
GEORGIA								
Sept. & Earlier	-	-	-	-	-	-	-	-
Oct.	0.5	9.8	1.5	99.2	18.3	4.01	102.28	101.5
Nov.	0.5	9.9	2.0	98.8	18.3	3.85	101.15	100.0
Dec.	0.5	10.5	2.0	98.9	17.2	3.80	100.80	99.7
Jan.	0.9	10.8	1.8	98.8	17.9	3.79	99.31	98.1
Feb.	0.5	10.5	2.2	97.9	17.8	3.89	99.63	97.6
Mar. & Later	0.4	10.5	3.5	93.1	17.9	3.96	100.21	93.3
Season	0.5	10.1	1.9	98.8	18.0	3.89	101.19	100.0
LOUISIANA								
Sept. & Earlier	-	-	-	-	-	-	-	-
Oct.	0.6	11.1	1.5	99.3	18.2	3.80	100.51	99.9
Nov.	0.7	10.3	2.0	98.2	18.1	3.77	100.13	98.3
Dec.	0.7	11.2	1.7	98.7	17.8	3.80	99.04	97.8
Jan.	0.4	12.9	1.6	99.1	18.0	3.64	98.81	98.0
Feb.	-	-	-	-	-	-	-	-
Mar. & Later	-	-	-	-	-	-	-	-
Season	0.7	11.0	1.7	98.9	18.1	3.79	99.97	98.9

Table 4. Cottonseed: Average quality and quantity factors, indexes and grades, by specified periods and states, 1996

Month	Quality factors - percent			Quantity factors - percent			Average grade	Number of samples
	Foreign matter	Moisture	Free fatty acids	Quality index	Oil	Ammonia		
MISSISSIPPI								
Sept. & Earlier	0.4	11.2	0.8	99.8	17.7	3.88	99.08	831
Oct.	0.5	10.9	0.9	99.9	17.8	3.83	99.15	393
Nov.	0.6	10.8	1.4	10.0	17.8	3.90	99.58	126
Dec.	1.8	11.8	1.1	99.3	18.0	3.60	98.40	21
Jan.	0.3	11.8	1.1	99.8	17.4	3.75	96.95	0
Feb.	0.4	11.2	0.9	99.8	17.7	3.85	98.85	205
Mar. & Later	0.4	11.2	0.9	99.8	17.7	3.85	98.85	1,576
Season	0.4	11.2	0.9	99.8	17.7	3.85	98.85	1,576
MISSOURI								
Sept. & Earlier	0.9	11.4	0.5	99.7	17.4	3.94	98.17	0
Oct.	1.0	11.6	0.6	99.6	17.3	3.77	96.74	602
Nov.	1.3	13.2	0.8	98.3	17.1	3.74	95.73	603
Dec.	1.1	12.8	1.0	98.6	17.5	3.61	96.68	181
Jan.	1.2	15.5	1.8	96.3	15.7	3.76	90.36	43
Feb.	-	-	-	-	-	-	-	12
Mar. & Later	0.0	11.8	0.6	99.4	17.3	3.83	97.18	0
Season	0.0	11.8	0.6	99.4	17.3	3.83	97.18	1,441
NEW MEXICO								
Sept. & Earlier	-	-	-	-	-	-	-	0
Oct.	-	-	-	-	-	-	-	0
Nov.	-	-	-	-	-	-	-	0
Dec.	-	-	-	-	-	-	-	0
Jan.	-	-	-	-	-	-	-	0
Feb.	-	-	-	-	-	-	-	0
Mar. & Later	-	-	-	-	-	-	-	0
Season	-	-	-	-	-	-	-	0
NORTH CAROLINA								
Sept. & Earlier	-	-	-	-	-	-	-	0
Oct.	-	-	-	-	-	-	-	0
Nov.	-	-	-	-	-	-	-	0
Dec.	-	-	-	-	-	-	-	0
Jan.	-	-	-	-	-	-	-	0
Feb.	-	-	-	-	-	-	-	0
Mar. & Later	-	-	-	-	-	-	-	0
Season	-	-	-	-	-	-	-	0



Table 4. Cottonseed: Average quality and quantity factors, indexes and grades, by specified periods and states, 1996

Month	Quality factors - percent			Quantity factors - percent			Quantity index	Average grade	Number of samples
	Foreign matter	Moisture	Free fatty acids	Quality index	Oil	Ammonia			
OKLAHOMA									
Sept. & Earlier	-	-	-	-	-	-	-	-	-
Oct.	0.8	10.4	0.4	100.0	18.1	3.84	100.31	100.3	0
Nov.	0.6	10.1	0.4	100.0	18.2	3.77	100.44	100.5	33
Dec.	0.7	10.4	0.6	100.0	18.2	4.04	101.93	101.8	67
Jan.	2.2	8.9	0.6	98.8	19.1	3.79	104.11	102.8	49
Feb.	2.7	8.6	0.9	98.2	19.4	3.85	104.70	103.6	72
Mar. & Later	3.8	9.3	0.7	97.3	19.2	3.71	103.93	101.0	111
Season	2.1	9.3	0.6	98.8	18.9	3.82	103.19	102.2	48
SOUTH CAROLINA									
Sept. & Earlier	-	-	-	-	-	-	-	-	-
Oct.	-	-	-	-	-	-	-	-	0
Nov.	0.5	10.1	1.7	100.0	18.1	3.67	99.42	99.5	0
Dec.	1.0	9.4	1.4	100.0	18.4	3.74	101.04	101.0	14
Jan.	-	-	-	-	-	-	-	-	11
Feb.	-	-	-	-	-	-	-	-	0
Mar. & Later	-	-	-	-	-	-	-	-	0
Season	0.8	9.8	1.6	100.0	18.3	3.71	100.23	100.3	25
TENNESSEE									
Sept. & Earlier	-	-	-	-	-	-	-	-	-
Oct.	0.7	11.9	0.5	99.5	17.8	3.88	99.44	98.9	0
Nov.	0.9	11.8	0.8	99.5	18.1	3.78	100.04	99.5	783
Dec.	1.0	12.9	1.0	98.8	18.0	3.70	99.32	98.1	426
Jan.	1.6	11.6	1.3	98.7	18.7	3.58	101.20	99.9	155
Feb.	-	-	-	-	-	-	-	-	69
Mar. & Later	0.7	10.8	1.3	100.0	17.0	4.01	96.86	97.0	0
Season	0.8	11.9	0.7	99.4	17.9	3.82	99.64	99.1	20
TEXAS									
Sept. & Earlier	-	-	-	-	-	-	-	-	-
Oct.	1.4	9.9	1.4	97.5	17.9	3.99	100.58	98.0	0
Nov.	1.8	7.9	0.4	99.1	19.3	4.06	105.88	105.8	853
Dec.	2.1	7.9	0.4	98.8	18.9	4.07	104.16	103.9	1,179
Jan.	2.2	7.6	0.4	99.1	18.9	4.14	105.40	104.4	981
Feb.	1.8	7.6	0.4	99.4	18.8	4.06	104.83	114.9	496
Mar. & Later	2.1	7.8	0.7	98.9	18.8	4.02	104.40	103.2	904
Season	1.9	8.2	0.6	98.8	18.8	4.06	104.22	105.5	90

Table 4. Cottonseed: Average quality and quantity factors, indexes and grades, by specified periods and states, 1996

Month	Quality factors - percent			Quantity factors - percent			Quantity index	Average grade	Number of samples
	Foreign matter	Moisture	Free fatty acids	Quality index	Oil	Ammonia			
Sept. & Earlier	-	-	-	-	-	-	-	-	-
Oct.	0.4	9.8	3.2	94.4	19.2	3.88	105.08	99.0	0
Nov.	0.8	9.8	2.6	95.8	18.7	3.75	102.44	98.3	17
Dec.	0.2	11.4	1.6	100.0	17.5	3.70	97.20	97.3	56
Jan.	4.1	7.8	0.3	96.9	20.5	4.69	115.14	111.5	25
Feb.	0.5	9.3	0.6	100.0	17.3	3.61	95.86	96.0	15
Mar. & Later	-	-	-	-	-	-	-	-	10
Season	0.0	9.9	2.0	97.0	18.6	3.83	102.27	99.3	123
OTHER STATES									