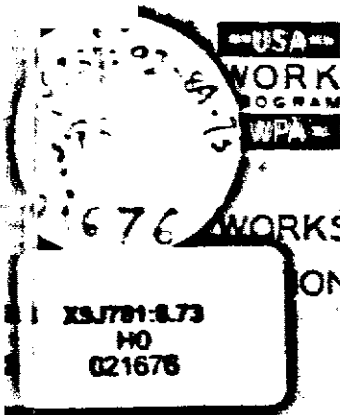


CHANGES IN TECHNOLOGY AND LABOR  
REQUIREMENTS IN CROP PRODUCTION

# COTTON



21676 WORKS PROGRESS ADMINISTRATION  
ONAL RESEARCH PROJECT

**THE WPA NATIONAL RESEARCH PROJECT  
ON REEMPLOYMENT OPPORTUNITIES AND RECENT CHANGES  
IN INDUSTRIAL TECHNIQUES**

Under the authority granted by the President in the Executive Order which created the Works Progress Administration, Administrator *Harry L. Hopkins* authorized the establishment of a research program for the purpose of collecting and analyzing data bearing on problems of employment, unemployment, and relief. Accordingly, the National Research Program was established in October 1935 under the supervision of *Corrington Gill*, Assistant Administrator of the WPA, who appointed the directors of the individual studies or projects.

The Project on Reemployment Opportunities and Recent Changes in Industrial Techniques was organized in December 1935 to inquire, with the cooperation of industry, labor, and governmental and private agencies, into the extent of recent changes in industrial techniques and to evaluate the effects of these changes on the volume of employment and unemployment. *David Weintraub* and *Irving Kaplan*, members of the research staff of the Division of Research, Statistics, and Finance, were appointed, respectively, Director and Associate Director of the Project. The task set for them was to assemble and organize the existing data which bear on the problem and to augment the existing surveys and analyses.

Governmental agencies which are the sources of pertinent information were in co-operating agencies of the United States: the Department of Agriculture, the Department of the Interior, the Bureau of Census, the Department of Labor, the Railroad Retirement Board, the Bureau of Economic Warfare, the Department of the Treasury, the Department of Commerce, the Federal Trade Commission, and the

Project was joined with the National Bureau of Economic Research, the Industrial Research Institute of the University of Pennsylvania, the Industrial Research, Inc., the Employment Institute of the University of California, the Economics Departments in the University of California, Illinois,

**WORKS PROGRESS ADMINISTRATION**

**HARRY L. HOPKINS**  
Administrator

**CORRINGTON GILL**  
Assistant Administrator

**NATIONAL RESEARCH PROJECT**

on

**Reemployment Opportunities and Recent Changes in Industrial Techniques**

**DAVID WEINTRAUB**  
Director

**IRVING KAPLAN**  
Associate Director

**Studies of Changing Techniques and Employment in Agriculture**  
John A. Hopkins, Economist in Charge



Bureau of Agricultural Economics, U.S.D.A.

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**CHANGES IN TECHNOLOGY AND LABOR REQUIREMENTS  
IN CROP PRODUCTION**

**C O T T O N**

by

William C. Holley

and

Lloyd E. Arnold

**WORKS PROGRESS ADMINISTRATION, NATIONAL RESEARCH PROJECT**

Report No. A-7

*Philadelphia, Pennsylvania*

*September 1938*

# WORKS PROGRESS ADMINISTRATION

WALKER-JOHNSON BUILDING  
1734 NEW YORK AVENUE NW,  
WASHINGTON, D. C.

HARRY L. HOPKINS  
ADMINISTRATOR

September 14, 1938

Hon. Harry L. Hopkins  
Works Progress Administrator

Sir:

I am happy to be able to transmit to you a report on recent changes in the technology and labor requirements of cotton production. This report, in conjunction with materials contained in such other reports as *Landlord and Tenant on the Cotton Plantation* and *Part-time Farming in the Southeast* prepared by the Division of Social Research and the reports on the *Mechanical Cotton Picker* and on *Corn* prepared by the National Research Project, adds considerably to the information already available on economic conditions in the South.

Cotton is the largest cash crop produced in the United States and it is grown in one of the most highly specialized farm regions of the world. Its production involves some two million farms and about nine million persons. Since 1909 the infestation of the boll weevil has caused some profound changes in methods of production, in yields per acre and quality of staple, and in location of acreage and production. Problems of soil-fertility maintenance, particularly in the Eastern Cotton Area where much of the soil is severely eroded, have been aggravated by a system of land tenure which makes it difficult to follow any long-range program of soil conservation. In addition, with increased production in foreign countries, competition on the world market has become increasingly severe.

In the face of these difficulties technology has played an important role. Improved practices in growing cotton and the selection of early maturing varieties have not only checked the downward trend in yields that

followed the boll-weevil infestation, but also have resulted in regaining the levels which prevailed before the advent of the weevil. Since 1928 there has been a tendency toward increase in the average staple length of cotton. The establishment of one-variety communities and cotton demonstrations and the registration of improved varieties have aided in this development.

The average amount of labor required to produce a bale of cotton in the major cotton-producing areas for the period 1933-36 amounted to 253 man-hours in the Eastern Cotton Area, 250 in the Delta Area, and 178 in the Western Cotton Area. This amounts to 1.98 pounds of cotton per man-hour in the Eastern Area, 2.00 in the Delta Area, and 2.81 in the Western Area. Average prices of lint cotton in the United States were 10.2 cents in 1933, 12.4 cents in 1934, and 11.1 cents in 1935. These prices applied to the hourly productivity present a rough picture of gross hourly returns to the farmer; out of this hourly return of from 20 to 30 cents the farmer has to pay for fertilizer, equipment, feed for work stock, land rental, and all other expenses of production. Under these conditions incomes of the producers are anything but adequate. In the study, *Landlord and Tenant on the Cotton Plantation*, made by T. J. Woofter, Jr. of our Division of Social Research, average annual earnings in 1934 for the various classes of tenants covered by the survey were found to be \$180 per family for wage hands, \$312 for cropper families, \$417 for other tenant families, and \$354 for cash-rent families. When we consider the fact that tenancy in one form or another embraces a majority of the cotton producers, it is small wonder that the conditions under which cotton is produced have occupied a prominent place in the deliberations of governmental as well as private relief agencies.

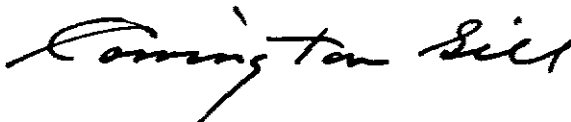
Throughout most of the Cotton Belt the family-size farm predominates as the unit of farm organization. Even on the large plantations landlords have shown preference for families to meet their labor needs. This organization of cotton production around the family resulted in a system of land tenure which has been both varied and insecure, particularly during the period covered by this study. In 1935 about 60 percent of the farms in the major cotton-producing areas were operated by tenants, about 40 percent of whom were croppers. The cropper differs very little from a hired laborer except that he assumes a large share of the risks of production. Various estimates place the average number

of years that a tenant occupies a farm at from 2 to 5 years. Farm tenancy and the mobility of tenants have had an important contributing effect on soil fertility and erosion and have made it difficult to plan any long-range soil-conservation program, for the tenant has little incentive to conserve or improve the soil.

In several of the important cotton-growing regions, notably in the Mississippi Delta and in western Areas, the trend toward mechanization has been greatly accelerated in the past few years. Numerous tenants have already been "tractored off" the land and now find employment on the cotton crop only as hired day laborers and for peak operations such as chopping and picking. There is evidence that this shift to tractor power and to larger implements requiring less farm labor per bale will continue. Furthermore, successful development of the experimental cotton-picking and cotton-chopping machines would greatly reduce the present seasonal peaks of employment.

This report on *Changes in Technology and Labor Requirements in Crop Production: Cotton* is one of a series of "Studies of Changing Techniques and Employment in Agriculture" conducted by our National Research Project on Reemployment Opportunities and Recent Changes in Industrial Techniques. The report was prepared by William C. Holley and Lloyd E. Arnold, under the direction of John A. Hopkins.

Respectfully yours,

A handwritten signature in cursive script that reads "Corrington Gill". The signature is written in black ink and is positioned above the typed name and title.

Corrington Gill  
Assistant Administrator



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## PREFACE

Of the country's five major crops, cotton requires much the greatest amount of labor, both in total and per acre. This crop also, more than most others, has resisted the tendency toward mechanization in agriculture, although recently there have been indications of an introduction of power farming in some of the major cotton-producing areas.

Between the periods 1907-11 and 1933-36 the labor requirements of cotton production declined by 16 percent per acre or, on a per-bale basis, by 20 percent. The greatest declines took place in the Western Cotton Area, that is, the area which also experienced the greatest increase in production during the period. The marked shift in the geographic distribution of cotton production to Oklahoma, Texas, and the far West has resulted in some economy in the utilization of labor. This shift is, however, partly offset by the increased proportions produced in the Delta Area, where labor requirements are above the average and where production has been more quickly adjusted to the changed requirements imposed by the boll weevil.

The decline in labor requirements per acre and per bale, in which all areas shared to some extent, reflects the increasing application of more efficient equipment. The development and introduction of large-scale and expensive equipment in cotton production has been seriously impeded by the small size of the farm unit and by the prevailing system of land tenure, particularly in the Old South. However, the accumulation of possibilities for economies through the use of modern equipment may overcome the resistance against extensive mechanization. These factors may in turn tend to change the tenancy and sharecropping system under which cotton is now raised in the Old South.

The tractor is now available for the preharvest operations of seedbed preparation, planting, and cultivation. Its use is feasible wherever the topography of the country presents level or gently rolling land, as in the Mississippi Delta, the Western Cotton Area of Oklahoma and northwest Texas, and the cotton lands of California, Arizona, and New Mexico. Under such conditions the use of the tractor is economical when cotton is grown on large farm units, such as exist in relatively greater numbers in the areas west of the Mississippi where the topography is

most favorable. In all these areas tractors have been gradually replacing horsepower. Increasing sales of tractors and displacement of sharecroppers, with attendant increased demand for seasonal laborers, were reported in 1937. In the Mississippi Delta, for instance, sharecroppers and share tenants have already been displaced to some extent by wage labor, whereas in the western Areas a large proportion of the cotton has for some time been harvested by migratory labor.

A primary obstacle to the extended mechanization of preharvest operations is the peak labor requirements for harvesting operations. The development of the mechanical cotton picker raises prospects for overcoming this impediment. It is believed that machines now under development warrant expectations of their adoption during the next decade. They are especially adaptable to use on the relatively level lands favorable to the use of tractors, and they are likely to be used there first. A further shift in cotton production to such lands may then be expected, accompanied by an increase in the size of cotton farms. The successful development of a mechanical cotton chopper, such as was recently reported, would enhance the prospects for adoption of a successful cotton picker by reducing the secondary peak of labor requirements in cotton production.

Valuable assistance in compiling material for this report was had from various bureaus of the United States Department of Agriculture and from several State experiment stations. The interpretations of material used are of course the responsibility of the National Research Project alone.

DAVID WEINTRAUB  
IRVING KAPLAN

PHILADELPHIA

July 30, 1938



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Table A-1.- COTTON, ACREAGE HARVESTED, 1909-36<sup>a</sup>  
(Thousands of acres)

Year	U.S. total	East. Cotton Area	Delta Cotton Area	West. Cotton Area	Middle East. Area <sup>b</sup>	Range Area <sup>c</sup>	California
1909	30,555	10,275	6,119	11,874	1,939	*	-
1910	31,508	10,399	6,167	12,536	2,006	*	8
1911	34,916	11,380	6,399	14,317	2,347	*	12
1912	32,557	10,652	5,680	13,721	2,154	*	9
1913	35,206	10,656	6,341	15,594	2,235	*	28
1914	35,615	11,575	6,449	14,870	2,260	n.a.	38
1915	29,951	9,894	5,402	12,391	1,919	5 <sup>d</sup>	12
1916	33,071	10,196	6,603	13,482	2,338	15 <sup>d</sup>	60
1917	32,245	9,152	6,180	14,121	2,324	41	78
1918	35,038	10,173	7,002	15,022	2,330	95	78
1919	32,906	9,931	6,647	13,752	2,155	106	85
1920	34,408	9,379	6,776	15,370	2,245	230	150
1921	28,678	7,772	5,841	12,776	1,964	90	55
1922	31,361	7,144	6,548	14,794	2,340	130	67
1923	35,550	7,303	6,924	17,985	2,604	191	83
1924	39,501	7,663	7,194	20,852	2,770	285	129
1925	44,386	8,869	8,730	22,624	3,044	267	172
1926	44,608	9,302	8,910	22,360	2,989	278	162
1927	38,342	8,242	7,500	19,290	2,541	228	128
1928	42,434	8,762	9,016	20,894	2,739	326	218
1929	43,232	8,906	9,412	20,989	2,767	353	309
1930	42,444	8,959	9,593	20,067	2,667	338	270
1931	38,704	8,124	9,111	18,130	2,326	301	192
1932	35,891	7,328	8,854	16,442	2,384	225	123
1933	29,383	5,859	6,662	13,939	2,019	235	208
1934	26,866	5,561	5,886	12,744	1,786	226	223
1935	27,335	5,760	6,002	12,975	1,718	250	218
1936	30,054	6,020	6,905	14,124	1,821	325	368

<sup>a</sup>Compiled from data obtained from the Bureau of Agricultural Economics, U. S. Department of Agriculture; see R. G. Bressler, Jr. and J. A. Hopkins, *Trends in Size and Production of the Aggregate Farm Enterprise, 1909-36* (Works Progress Administration, National Research Project, Report No. A-8, July 1936)

<sup>b</sup>Virginia, North Carolina, and Tennessee.

<sup>c</sup>New Mexico and Arizona only States reporting cotton.

<sup>d</sup>Rounded off from consideration of miscellaneous States' figures.

\*Less than 500 acres.

n.a. Data not available.

Table A-2.- COTTON, YIELD PER ACRE, 1909-36<sup>a</sup>

(Pounds of lint)

Year	U.S. total	East. Cotton Area	Delta Cotton Area	West. Cotton Area	Middle East. Area <sup>b</sup>	Range Area <sup>c</sup>	Calif- ornia
1909	156	183	160	124	212	#	-
1910	176	140	180	151	251	#	358
1911	215	258	189	176	317	#	390
1912	201	193	186	206	259	#	465
1913	192	233	213	147	256	#	331
1914	216	248	201	188	283	n. a.	341
1915	178	196	187	149	254	268 <sup>d</sup>	348
1916	166	154	173	161	218	268 <sup>d</sup>	329
1917	167	190	195	138	180	268 <sup>e</sup>	228
1918	164	211	191	104	257	267 <sup>e</sup>	287
1919	166	183	154	143	258	270 <sup>e</sup>	262
1920	187	188	176	177	271	212 <sup>g</sup>	212
1921	132	130	154	100	266	239 <sup>g</sup>	226
1922	149	136	171	124	259	217 <sup>g</sup>	150
1923	136	127	110	133	238	270 <sup>g</sup>	313
1924	165	174	178	148	210	277 <sup>g</sup>	287
1925	174	184	246	124	262	331 <sup>g</sup>	339
1926	193	205	229	158	274	339 <sup>g</sup>	387
1927	162	175	185	134	235	340 <sup>g</sup>	340
1928	163	156	181	144	228	348 <sup>g</sup>	378
1929	164	188	212	116	226	329 <sup>g</sup>	400
1930	157	217	152	116	214	361 <sup>g</sup>	468
1931	212	224	239	174	286	343 <sup>g</sup>	440
1932	174	164	168	162	235	300 <sup>g</sup>	503
1933	213	229	192	195	276	386 <sup>g</sup>	500
1934	172	223	203	102	287	438 <sup>g</sup>	556
1935	186	238	212	130	256	402 <sup>g</sup>	524
1936	197	242	275	109	283	412 <sup>g</sup>	572

<sup>a</sup>Compiled from data obtained from the Bureau of Agricultural Economics, U. S. Department of Agriculture; see R. G. Bressler, Jr. and J. A. Hopkins, *Trends in Size and Production of the Aggregate Farm Enterprise, 1909-36* (Works Progress Administration, National Research Project, Report No. A-R, July 1938).

<sup>b</sup>Virginia, North Carolina, and Tennessee.

<sup>c</sup>New Mexico and Arizona only States reporting cotton.

<sup>d</sup>Average of 1917, 1918, and 1919.

<sup>e</sup>Calculated from acreage and lint production.

<sup>f</sup>Base too small for calculation.

<sup>g</sup>n. a. Data not available.

Table A-3.- COTTON, LINT PRODUCTION, 1909-36<sup>a</sup>  
(Thousands of 500-pound bales)

Year	U.S. total	East. Cotton Area	Delta Cotton Area	West. Cotton Area	Middle East. Area <sup>b</sup>	Range Area <sup>c</sup>	California
1909	10,005	3,927	2,049	3,068	858	#	-
1910	11,609	4,124	2,330	3,972	1,053	#	6
1911	15,694	6,133	2,528	5,278	1,556	#	10
1912	13,703	4,299	2,214	5,901	1,167	#	8
1913	14,153	5,188	2,828	4,785	1,195	#	19
1914	16,112	6,000	2,711	5,854	1,340	n. a.	27
1915	11,172	4,061	2,111	3,867	1,018	3 <sup>d</sup>	9
1916	11,448	3,283	2,389	4,550	1,064	8 <sup>d</sup>	41
1917	11,284	3,636	2,519	4,084	877	23	37
1918	12,018	4,491	2,801	3,274	1,253	53	47
1919	11,411	3,796	2,143	4,115	1,163	60	47
1920	13,429	3,699	2,497	5,681	1,271	102	67
1921	7,945	2,121	1,889	2,679	1,094	45	26
1922	9,755	2,028	2,344	3,849	1,270	59	21
1923	10,140	1,943	1,594	4,996	1,296	108	54
1924	13,630	2,795	2,686	6,460	1,219	165	77
1925	16,105	3,405	4,501	5,854	1,670	185	122
1926	17,978	3,998	4,262	7,401	1,715	197	131
1927	12,956	3,020	2,901	5,389	1,251	162	91
1928	14,477	2,861	3,409	6,310	1,309	237	172
1929	14,825	3,509	4,165	5,083	1,309	243	259
1930	13,932	4,060	3,049	4,891	1,195	255	264
1931	17,097	3,812	4,558	6,581	1,393	216	177
1932	13,003	2,516	3,111	5,584	1,174	141	129
1933	13,049	2,809	2,680	5,694	1,165	190	217
1934	9,636	2,595	2,496	2,722	1,072	207	259
1935	10,638	2,862	2,668	3,523	919	210	239
1936	12,407	3,050	3,968	3,235	1,077	280	440

<sup>a</sup>Compiled from data obtained from the Bureau of Agricultural Economics, U. S. Department of Agriculture; see R. O. Bressler, Jr. and J. A. Hopkins, *Trends in Size and Production of the Aggregate Farm Enterprise, 1909-36* (Works Progress Administration, National Research Project, Report No. A-6, July 1938).

<sup>b</sup>Virginia, North Carolina, and Tennessee.

<sup>c</sup>New Mexico and Arizona only States reporting cotton.

<sup>d</sup>Rounded off from consideration of miscellaneous States figures.

<sup>e</sup>Base too small for calculation.

n. a.-Data not available.

Table A-4.-- NUMBER OF FARMS SURVEYED AND ACREAGE PER FARM IN ALL CROPS AND IN COTTON, BY COUNTIES, 1909-36\*

Section, county, and State	1909			1919			1929			1936		
	Number of farms surveyed	Acreage per farm		Number of farms surveyed	Acreage per farm		Number of farms surveyed	Acreage per farm		Number of farms surveyed	Acreage per farm	
		All crops	Cotton		All crops	Cotton		All crops	Cotton		All crops	Cotton
Coastal Plain	169	87	36	214	100	41	311	85	32	311	80	22
Sumter, Ga.	37	116	51	46	140	60	76	98	34	76	89	21
Brooks, Ga.	43	98	30	54	104	29	75	86	22	75	83	17
Darlington, S. C.	41	71	30	61	81	35	82	72	28	82	69	19
Madison, Miss.	48	67	36	53	84	44	78	86	43	78	80	31
Piedmont	89	57	27	114	59	27	156	54	23	156	46	14
Tallapoosa, Ala.	39	47	23	56	50	23	76	43	18	76	40	13
Greene, Ga.	50	65	30	58	67	31	80	65	27	80	52	15
Eastern Hilly												
Marshall, Ala.	42	40	16	51	42	19	80	44	20	80	38	14
Western Hilly												
White, Ark.	81	64	38	102	78	44	161	73	42	161	64	30
Rusk, Tex.	38	47	25	49	70	39	80	63	33	80	57	25
	43	79	50	53	86	49	81	84	50	81	72	35
Mississippi Delta												
Washington and Bolivar, Miss.	35	174	114	40	203	134	76	247	156	76	271	148
Texas Black Waxy Prairie												
Ellis, Tex.	41	152	76	47	156	83	80	145	84	80	146	73
Western Semiarid												
Lubbock, Tex.	26	132	49	99	159	68	162	200	114	162	200	98
Tillman, Okla.	4	114	41	44	141	66	87	209	120	87	205	110
	22	135	50	55	174	70	75	190	107	75	195	83

\*Data obtained in NRP Farm Survey, 1936. See table 5 for major topography and soil type of each county.

**APPENDIX B**  
**CULTURAL PRACTICES FOLLOWED ON FARMS**  
**SURVEYED, 1909-36**

and

**APPENDIX C**  
**HOURS OF LABOR USED PER ACRE ON FARMS**  
**SURVEYED, 1909-36**

These appendixes consist of 37 pages of statistical material summarizing by counties and for the years 1909, 1919, 1929, and 1936 the information indicated in the above titles. The data were obtained in the 1936 field study of the WPA National Research Project and are based on the memory of the farmers interviewed. Since these detailed statistics are of interest to relatively few readers of this report, they are not included here. Two typed copies were bound separately and were deposited in the Library of the Bureau of Agricultural Economics of the United States Department of Agriculture at Washington, D. C.

A list of the tables included in these appendixes follows:

**APPENDIX B**

Table

- B-1. Number of schedules obtained, acreages of cotton and of all crops on farms surveyed, for specified years, 1909-36<sup>1</sup>
- B-2. Percentage of farmers following specified preharvest cultural practices in producing cotton, 1909-36<sup>2</sup>
- B-3. Percentage of farmers following specified harvesting practices, 1909-36<sup>2</sup>
- B-4. Cultural practices in the production of cotton, 1909-36<sup>3</sup>
- B-5. Average amounts of fertilizer, side dressing, and manure applied per acre on farms reporting, 1909-36

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<sup>1</sup>Same data as in table A-4.

<sup>2</sup>Tabulated by methods used and number of times performed.

<sup>3</sup>The table presents the average number of times (average of all farms surveyed) each operation was performed.

## APPENDIX C

## Table

- C-1. Hours of labor used per acre preceding harvest by operations, 1909-36
- C-2. Estimates of labor used in harvesting cotton by operations, with yield per acre and amount picked per worker per day, 1909-36
- C-3. Labor used in producing cotton, 1909-36<sup>4</sup>

<sup>4</sup>Presented as total amount of labor per acre with subtotals of preharvest and harvest labor.

Table D-1.- PERCENTAGE DISTRIBUTION OF FARMS REPORTING RECOGNIZED VARIETIES BY PRINCIPAL VARIETY REPORTED IN THE THREE MAJOR COTTON AREAS, 1909-36<sup>a</sup>

Variety	Percent of farmers reporting in -											
	Eastern Area				Delta Area				Western Area			
	1909	1919	1929	1936	1909	1919	1929	1936	1909	1919	1929	1936
All varieties	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Improved varieties <sup>b</sup>	72.9	84.3	86.8	90.5	69.7	78.1	91.1	92.9	89.9	81.4	58.1	56.2
Cleveland and Cleveland Big Boll	47.0	36.2	14.8	6.9	24.4	10.2	1.4	0.4	0	0	0	0
Cook	5.1	8.4	8.7	8.3	0	0	0	0	0	0	0	0
Petty's Toole	5.1	5.8	8.8	7.0	0	0	0	0	0	0	0	0
Toole	2.9	6.6	11.0	9.3	0	0	0	0	0	0	0	0
Rucker	3.5	7.5	13.2	8.2	0	0	0	0	0	0	0	0
D. and P. L.	4.0	5.4	9.4	13.1	0	1.7	9.9	21.3	0	0	0	0
Coker	0.6	3.4	9.7	7.7	2.4	7.5	4.2	0.9	0	0	0	0
Lightning Express	1.2	2.0	4.2	3.5	4.6	5.8	0.4	0.4	0	0	0	0
Stoneville	0	0.4	1.4	4.0	0	0	1.0	2.8	0	0	0	0
Wilds	0	1.2	2.6	5.0	0	0	2.9	2.8	0	0	0	0
Foster	0	0.4	1.2	2.3	1.1	4.2	2.3	0.9	0	0	0	0
Farm Relief	0	0	0.5	10.3	0	0	1.0	10.4	0	0	0	0
Rowden	0	0	0	0	23.2	17.7	10.4	5.4	29.2	8.2	1.2	0.6
Half and Half	3.5	5.0	3.3	2.9	7.0	14.3	11.4	10.4	2.5 <sup>c</sup>	12.5 <sup>c</sup>	19.4 <sup>c</sup>	21.7 <sup>c</sup>



Delfos	0	0	0	0	2.4	7.5	19.8	15.9	0	0	0	0
Missdel	0	0	0	0	0	1.7	17.4	15.4	0	0	0	0
Acala	0	0	0	0	1.1	4.2	8.1	4.1	0	2.8	4.8	2.9
Mebane and strains	0	0	0	0	3.5	3.3	0.9	1.8	47.2	43.2	22.1	20.0
Bennett and Lone Star	0	0	0	0	0	0	0	0	5.6	6.0	0.3	0.3
Kasch	0	0	0	0	0	0	0	0	2.3	5.0	3.9	1.2
Lankhart	0	0	0	0	0	0	0	0	1.1	1.1	0.9	3.5
Bryant Mebane	0	0	0	0	0	0	0	0	1.1	1.7	2.3	2.9
Qualla	0	0	0	0	0	0	0	0	0	0	0.9	1.9
Watson	0	0	0	0	0	0	0	0	1.1	1.1	2.3	1.2
Unimproved varieties	17.8	5.3	1.6	0.2	20.9	9.2	1.4	0	7.9	18.0	41.6	43.8
Peterkin	7.6	0.8	0.2	0	0	0	0	0	0	0	0	0
King and King improved	5.1	2.0	0.4	0	11.6	8.4	1.0	0	0	0	0	0
Poulnott	5.1	2.5	1.0	0.2	0	0	0	0	0	0	0	0
Black Rattler	0	0	0	0	9.3	0.8	0.4	0	0	0	0	0
Half and Half	0	0	0	0	0	0	0	0	7.9 <sup>d</sup>	18.0 <sup>d</sup>	41.6 <sup>d</sup>	43.8 <sup>d</sup>
Other varieties	9.3	10.4	11.6	9.3	9.4	12.7	7.5	7.1	2.2	0.6	0.3	0

<sup>a</sup>Data obtained in NRP Farm Survey, 1936.

<sup>c</sup>Half and Half as reported in Oklahoma.

<sup>b</sup>Improved varieties classified on basis of State report as published. J. O. Ware, Extent of Improved Varieties of Cotton in the United States (U. S. Dept. Agr. Leaflet, mimeo., 1937).

<sup>d</sup>Half and Half as reported in Texas where not considered as improved.

Table D-2.- AVERAGE STAPLE LENGTH OF AMERICAN UPLAND COTTON IN THE UNITED STATES AND IN THE THREE MAJOR COTTON AREAS, 1928-36<sup>a</sup>

Year	United States		Eastern Area		Delta Area		Western Area	
	Six- teenths of an inch	Inches	Six- teenths of an inch	Inches	Six- teenths of an inch	Inches	Six- teenths of an inch	Inches
1928	15.18	0.949	14.64	0.915	15.95	0.997	15.01	0.938
1929	15.11	.944	14.43	.902	15.95	0.997	14.80	.925
1930	15.22	.951	14.66	.916	15.94	0.996	15.10	.944
1931	15.44	.965	14.89	.931	16.38	1.024	15.05	.941
1932	15.45	.966	15.04	.940	16.41	1.026	14.96	.935
1933	15.55	.972	14.99	.937	16.74	1.046	15.18	.949
1934	15.58	.974	15.17	.948	16.60	1.038	14.74	.921
1935	15.47	.967	15.10	.944	16.42	1.026	14.84	.928
1936	15.78	.986	15.49	.968	16.56	1.035	14.76	.922

<sup>a</sup>Data for: 1928-33 obtained or derived from Grade, Staple Length, and Tenderability of Cotton in the United States, 1928-29 to 1933-34 (U. S. Dept. Agr. Statistical Bull. No. 52, 1936), pp. 17-22; 1934 from same for 1928-29 to 1934-35 (Statistical Bull. No. 56, 1937), pp. 21-3; 1935 from same for 1928-29 to 1935-36 (Statistical Bull. No. 60, 1937), pp. 17-9; 1936 from same for 1928-29 to 1936-37 (mimeo., July 1937), pp. 22-3.

Table D-3.- TENDERABILITY OF AMERICAN UPLAND COTTON GINNED IN THE UNITED STATES AND IN THE THREE MAJOR COTTON AREAS, 1928-36<sup>a</sup>

(Tenderable cotton<sup>b</sup> as a percentage of all cotton)

Year	United States	Eastern Area	Delta Area	Western Area
1928	81.8	83.1	87.2	79.9
1929	75.7	69.4	89.1	69.3
1930	84.6	78.0	90.3	85.1
1931	89.3	94.2	92.7	85.5
1932	90.5	92.0	95.7	87.5
1933	93.1	93.6	98.3	90.8
1934	90.1	90.6	95.3	83.4
1935	80.2	81.0	94.6	69.6
1936	87.0	95.4	94.2	70.6

<sup>a</sup>Data for: 1928-33 from Grade, Staple Length, and Tenderability of Cotton in the United States, 1928-29 to 1933-34 (U. S. Dept. Agr. Statistical Bull. No. 52, 1936), pp. 115-6; 1934 from same for 1928-29 to 1934-35 (Statistical Bull. No. 56, 1937), pp. 55-6; 1935 and 1936 from same for crop of 1936 (prelim. release, mimeo., Apr. 1937).

<sup>b</sup>Tenderable in settlement of future contracts. In general, tenderable cotton includes all except cotton shorter than 7/8 inch in staple, regardless of grade, and cotton of certain of the lower grades in the various color groups irrespective of staple length.

Table D-4.- TONS OF FERTILIZER CONSUMED IN THE THREE MAJOR COTTON AREAS AND PRICE OF COTTON, 1909-35

Year	Fertilizer consumed (thousands of tons) <sup>a</sup>				Price of cotton (cents per pound) <sup>b</sup>
	Total	Eastern Area	Delta Area	Western Area	
1909	n.a.	n.a.	n.a.	n.a.	13.60
1910	2,708	2,422	251	35	13.95
1911	3,025	2,692	279	54	9.60
1912	2,746	2,442	245	59	11.49
1913	2,670	2,314	279	77	12.51
1914	3,352	2,970	303	79	7.36
1915	2,051	1,846	185	20	11.22
1916	2,062	1,781	238	43	17.33
1917	2,234	1,957	233	44	27.12
1918	2,613	2,278	274	61	28.92
1919	2,645	2,323	272	50	35.41
1920	2,855	2,477	319	59	15.92
1921	1,447	1,303	120	24	17.01
1922	1,623	1,333	254	36	22.87
1923	2,292	1,817	393	82	28.69
1924	2,540	1,980	428	132	22.91
1925	2,848	2,250	492	106	19.59
1926	2,885	2,236	519	130	12.47
1927	2,390	1,918	387	85	20.19
1928	3,109	2,353	603	153	17.99
1929	3,169	2,304	659	206	16.79
1930	3,211	2,322	737	152	9.46
1931	2,131	1,705	354	72	5.66
1932	1,197	1,009	151	37	6.52
1933	1,509	1,285	188	36	10.17
1934	1,821	1,480	280	61	12.36
1935	2,068	1,653	346	69	11.09

<sup>a</sup>Data obtained from National Fertilizer Association and U. S. Department of Agriculture, Bureau of Chemistry and Soils.

<sup>b</sup>Agricultural Statistics, 1937 (U. S. Dept. Agr., 1937), pp. 88-9.

n.a.—Data not available.

Table E-1.- LABOR USED IN PRODUCING COTTON IN THE UNITED STATES

Yearly Averages for 1907-11 to 1933-36, by States

Cotton-producing area and State	Thousands of acres <sup>a</sup>		Millions of man-hours on -			Hours per harvested acre on <sup>b</sup> -		Production (thousands of bales) <sup>a</sup>	Hours per bale produced for <sup>c</sup> -	
	Harvested	Abandoned	Total acreage	Harvested acreage	Abandoned acreage	Harvested acreage	Total acreage <sup>d</sup>		Harvested crop	Total crop <sup>d</sup>
1907-11										
United States	31,759	808	3,343	3,321	24	105	105	12,332	269	271
Eastern	10,483	216	1,358	1,349	8	129	130	4,536	297	299
South Carolina	2,358	43	346	344	2	146	147	1,241	277	279
Georgia	4,614	108	595	591	4	128	129	2,017	293	295
Alabama	3,511	65	417	414	2	118	119	1,278	324	326
Delta	6,480	209	793	786	8	121	122	2,597	303	305
Mississippi	3,367	94	421	418	3	124	125	1,335	313	315
Louisiana	1,133	42	140	138	2	122	123	406	340	344
Arkansas	1,980	73	232	230	3	116	117	856	268	271
Western	12,374	333	863	858	6	69	70	3,997	215	216
Texas	10,002	241	684	680	4	68	68	3,188	213	214
Oklahoma	2,372	92	179	178	2	75	76	809	220	222
Middle Eastern <sup>e</sup>	2,041	37	285	284	1	139	140	1,072	265	266
Irrigated Area <sup>f</sup>	4	*	*	*	*	122	122	3	163	163
All other States <sup>g</sup>	377	13	43	43	*	114	114	127	339	339

## 1917-21

United States	32,655	1,215	3,089	3,062	27	94	95	11,219	273	275
Eastern	9,282	203	1,115	1,109	7	119	120	3,550	312	314
South Carolina	2,532	36	361	360	1	142	146	1,322	272	273
Georgia	4,408	112	806	803	4	114	115	1,575	319	322
Alabama	2,342	55	248	246	2	105	106	653	377	379
Delta	6,489	194	738	731	6	113	114	2,369	309	312
Mississippi	2,755	85	317	314	3	114	115	960	327	330
Louisiana	1,250	40	148	146	1	117	118	438	334	337
Arkansas	2,484	69	273	271	2	109	110	971	279	281
Western	14,208	758	883	872	11	61	62	3,967	220	223
Texas	11,421	564	693	685	8	60	61	3,093	222	224
Oklahoma	2,787	194	190	187	3	67	68	874	214	217
Middle Eastern <sup>g</sup>	2,204	41	301	299	2	136	137	1,132	264	266
Irrigated Area <sup>f</sup>	201	7	22	22	*	109	109	102	216	216
All other States <sup>h</sup>	271	12	30	29	*	107	111	99	293	303

See footnotes at end of table.

Table E-1.- LABOR USED IN PRODUCING COTTON IN THE UNITED STATES - Continued

Yearly Averages for 1907-11 to 1933-36, by States

Cotton-producing area and State	Thousands of acres <sup>a</sup>		Millions of man-hours on -			Hours per harvested acre on <sup>b</sup> -		Production (thousands of bales) <sup>a</sup>	Hours per bale produced for <sup>c</sup> -	
	Harvested	Abandoned	Total acreage	Harvested acreage	Abandoned acreage	Harvested acreage	Total acreage <sup>d</sup>		Harvested crop	Total crop <sup>d</sup>
1927-31										
United States	41,031	988	3,493	3,474	18	85	85	14,658	237	238
Eastern	8,598	148	974	969	5	113	113	3,452	281	282
South Carolina	1,955	46	244	242	2	124	125	858	283	285
Georgia	3,245	59	362	360	2	111	112	1,291	279	281
Alabama	3,398	43	368	367	1	108	108	1,303	282	283
Delta	8,927	150	982	978	5	110	110	3,615	271	272
Mississippi	3,875	50	439	438	2	113	113	1,594	275	276
Louisiana	1,799	28	206	205	1	114	115	733	280	281
Arkansas	3,253	72	337	335	2	103	104	1,288	260	262
Western	19,875	631	1,072	1,065	7	54	54	5,651	188	190
Texas	16,070	484	857	852	5	53	53	4,551	187	188
Oklahoma	3,805	147	215	213	2	56	56	1,100	194	195
Middle Eastern <sup>e</sup>	2,608	36	345	343	1	132	132	1,291	266	267
Irrigated Area <sup>f</sup>	532	10	63	63	*	118	118	416	151	151
All other States <sup>g</sup>	491	13	57	56	*	114	116	233	240	245

## 1933-36

United States	28,410	3,321	2,489	2,433	62	86	88	11,432	213	218
Eastern	5,800	525	716	699	17	121	123	2,832	247	253
South Carolina	1,357	117	183	179	4	132	135	744	241	246
Georgia	2,185	192	266	260	6	119	122	1,056	246	252
Alabama	2,258	216	267	260	7	115	118	1,032	252	259
Delta	6,354	647	739	721	21	113	116	2,955	244	250
Mississippi	2,742	255	339	332	8	121	124	1,368	243	248
Louisiana	1,271	126	147	144	4	113	116	570	252	259
Arkansas	2,351	266	253	245	9	104	108	1,017	240	249
Western	13,443	1,944	673	654	20	49	50	3,791	172	178
Texas	10,913	1,476	549	535	15	49	50	3,181	168	173
Oklahoma	2,530	468	124	119	5	47	49	610	195	202
Middle Eastern <sup>a</sup>	1,836	142	238	236	2	129	130	1,055	224	226
Irrigated Area <sup>f</sup>	513	23	65	65	1	127	127	515	126	126
All other States <sup>g</sup>	454	40	58	58	1	128	128	284	204	204

<sup>a</sup>Data from U. S. Department of Agriculture, Bureau of Agricultural Economics.

<sup>b</sup>Average hours per acre for States (marketing excluded) were calculated by weighting the hours per acre in sections within States, as obtained in the NRP Farm Survey and earlier studies, by the cotton acreage in each section, as reported for counties by the U. S. Census Bureau. The hours per acre for States were then weighted by 5-year average acreages to obtain average labor requirements in each of the areas and in the United States.

<sup>c</sup>Gross, includes bagging and ties.

<sup>d</sup>Hours per harvested acre (and per bale) adjusted to include labor spent on abandoned acreage.

<sup>e</sup>North Carolina, Tennessee, and Virginia.

<sup>f</sup>Arizona, California, and New Mexico.

<sup>g</sup>Illinois, Kansas, Kentucky, Missouri, and Florida.

<sup>h</sup>Less than 0.5.

Table F-1.- ABSTRACT OF DATA FROM SECONDARY SOURCES, LABOR ON COTTON

County or section	Year of study	Number of records	Yield per acre, lint, pounds	Man-hours per acre			Source <sup>a</sup>
				Total	Preharvest	Harvest	
Alabama							
Chilton Co.	1923	51	134	111.1	79.7	31.4	USDA <sup>b</sup>
Dale Co.	1918	90	194	117	67	50	USDA Bull.1000,t.6,6
Lauderdale Co.	1919	84	192	120	69	51	USDA Bull.1000,t.6,6
Madison Co.	1923	52	110	101.9	70.1	31.8	USDA <sup>b</sup>
Marshall Co.	1918	90	227	127	76	61	USDA Bull.1000,t.6,6
Marshall Co.	1919	79	272	128	70	58	USDA Bull.1000,t.6,6
Marshall and De Kalb Cos.	1928-29	106	358	111.9	68.3	55.6	AES Bull.236,der.from t.18
State <sup>c</sup>	1918 <sup>d</sup>	n.a.	n.a.	121.9	69.4	62.6	Polytechnic Inst.Ext.Services Cir.33,p.44
Tallapoosa Co.	1918	69	172	124	65	39	USDA Bull.1000,t.6,6
Arizona							
Salt River Valley	1928-30	n.a.	n.a.	n.a.	25	n.a.	AES Bull.146,t.1,3,4,7,9
Acala <sup>e</sup>	1928	(f)	420	35-39 <sup>h</sup>	32-36 <sup>h</sup>	3 <sup>h</sup>	Ext.Cir.60,p.6; t.1,2
Short, staple <sup>e</sup>	1928	n.a.	495	n.a.	22.9	n.a.	AES Bull.139,t.I-III
Upland; short, staple <sup>e</sup>	1929	51	467	n.a.	19.3	n.a.	AES Bull.146,t.1,3,4,7,9
Upland; short, staple <sup>e</sup>	1930	38	474	n.a.	19.5	n.a.	AES Bull.146,t.1,3,4,7,9
Pima <sup>e</sup>	1928	n.a.	379.5	n.a.	27.5	n.a.	AES Bull.139,t.I-III
Pima <sup>e</sup>	1928	(f)	320	40-44 <sup>h</sup>	37-41 <sup>h</sup>	3 <sup>h</sup>	Ext.Cir.60,p.6; t.1,2
Pima <sup>e</sup>	1929	58	311	n.a.	20.5	n.a.	AES Bull.146,t.1,3,4,7,9
Pima <sup>e</sup>	1930	29	348	n.a.	18.3	n.a.	AES Bull.146,t.1,3,4,7,9
Arkansas							
Chicot Co.	1920 <sup>d</sup>	n.a.	600 <sup>i</sup>	11.7 <sup>j</sup>	6.8 <sup>j</sup>	5.1 <sup>j</sup>	USDA Dept.Bull.1181,t.1; pp.10-2
Columbia Co.	1920 <sup>d</sup>	n.a.	600 <sup>i</sup>	9.4 <sup>j</sup>	4.4 <sup>j</sup>	5.1	USDA Dept.Bull.1181,t.1; pp.10-2
Crawford Co.	1920 <sup>d</sup>	n.a.	600 <sup>i</sup>	9.5 <sup>j</sup>	4.4 <sup>j</sup>	6.2	USDA Dept.Bull.1181,t.1; pp.10-2
Delta Cos. <sup>k</sup>							
56-42 inch rows							
Mules <sup>l</sup>	1929	94	n.a.	190.0	76.1	113.9	USDA Tech.Bull.497,t.15
Tractors <sup>l</sup>	1929	24	n.a.	117.5	40.7	76.8	USDA Tech.Bull.497,t.15
Mules and tractors <sup>l</sup>	1929	40	n.a.	173.1	64.6	108.5	USDA Tech.Bull.497,t.15
44-48 inch rows, mules <sup>l</sup>	1929	11	n.a.	188.7	90.1	98.6	USDA Tech.Bull.497,t.15



Faulkner Co.	1914	29	n.a.	9.8 <sup>j</sup>	n.a.	n.a.	USDA Dept. Bull. 1181, t. 1; pp. 10-2
Faulkner Co.	1923	53	114	84.2	67.0	27.2	USDA <sup>b</sup>
Lee Co.	1919	83	174	164	109	55	USDA Bull. 1000, t. 5, 6
Lee Co.	1923	52	64	83.4	67.3	26.1	USDA <sup>b</sup>
Mississippi Co.	1920 <sup>d</sup>	n.a.	600 <sup>i</sup>	11.9 <sup>j</sup>	6.8 <sup>j</sup>	5.1 <sup>j</sup>	USDA Dept. Bull. 1181, t. 1; pp. 10-2
Fulaski Co.	1920 <sup>d</sup>	n.a.	600 <sup>i</sup>	11.1 <sup>j</sup>	6.0 <sup>j</sup>	5.1 <sup>j</sup>	USDA Dept. Bull. 1181, t. 1; pp. 10-2
State	1922 <sup>d</sup>	n.a.	n.a.	112	n.a.	n.a.	USDA Dept. Bull. 1346, a-t, VIII
Florida							
Jackson Co.	1926	14	169	108.7	49.5	59.2	Univ. of Fla. <sup>2</sup>
Georgia							
Brooks Co.	1914	143	299	13.9 <sup>j</sup>	n.a.	n.a.	USDA Bull. 646, p. 2; t. XVIII
Greene Co.	1918	78	260	131	74	57	USDA Bull. 1000, t. 5, 6
Greene Co.	1919	74	225	108	63	45	USDA Bull. 1000, t. 5, 6
Greene Co.	1923	50	163	130.1	90.2	39.9	USDA <sup>b</sup>
Laurens Co.	1918	85	277	125	61	64	USDA Bull. 1000, t. 5, 6
Laurens Co.	1919	77	93	78	55	23	USDA Bull. 1000, t. 5, 6
Limestone Valleys	1929	49	n.a.	99.7	41.5	56.3	AES Bull. 434, t. XVIII, XXIX
Mitchell Co.	1919	50	159	100	61	39	USDA Bull. 1000, t. 5, 6
Piedmont	1918 <sup>d</sup>	n.a.	n.a.	147.9	93.4	54.5	State Coll. <sup>a</sup>
Piedmont	1929	50	n.a.	126.9	56.9	70.0	AES Bull. 434, t. XVIII, XXIX
Southern Coastal Plains	1913-18 <sup>d</sup>	n.a.	n.a.	137.0	74.9	62.1	State Coll. <sup>c</sup>
Southern Coastal Plains	1921 <sup>d</sup>	249	n.a.	132.5	n.a.	n.a.	USDA Dept. Bull. 1292, t. 1
Southern Coastal Plains	1929	73	n.a.	99.9	49.0	51.0	AES Bull. 434, t. XVIII, XXIX
State	1922 <sup>d</sup>	n.a.	n.a.	125	n.a.	n.a.	USDA Dept. Bull. 1348, a-t, VIII
Sumter Co.	1918	80	244	136	61	65	USDA Bull. 1000, t. 5, 6
Sumter Co.	1923	51	93	112.8	82.6	30.2	USDA <sup>b</sup>
Louisiana							
Northwest	1918 <sup>d</sup>	191	n.a.	100.3	50.3	50.0	USDA Bull. 961, t. I, XVII
Sugarcane Area	1929	n.a.	n.a.	121.6	56.7	62.9	AES La. Bull. 215, a-t, 26

See footnotes at end of table.

Table F-1.- ABSTRACT OF DATA FROM SECONDARY SOURCES, LABOR ON COTTON - Continued

County or section	Year of study	Number of records	Yield per acre, lint, pounds	Man-hours per acre			Source <sup>a</sup>
				Total	Preharvest	Harvest	
<b>Mississippi</b>							
Bolivar Co.	1923	61	186	113.6	73.6	40.0	USDA <sup>b</sup>
Choctaw Co.	1924-26	39	206	105	60.9	44.1	AES Bull.257,t.8
Choctaw Co.	1925	17	214	104.6	56.9	47.6	AES Bull.237,t.3
Delta Cos.	1929	(p)	(p)	(p)	(p)	(p)	USDA Tech.Bull.497,t.15
Jones Co.	1927	19	298	121.1	61.7	69.4	AES Bull.276,t.7,8
Jones Co.	1928	15	123 <sup>q</sup>	100.3	72.0	28.3	AES Bull.276,t.7,8
Madison Co.	1923	52	131	141.4	93.0	48.4	USDA <sup>b</sup>
Monroe Co.	1919	49	132	88	54	34	USDA Bull.1000,t.5,6
Washington Co.	1919	29	171	141	87	54	USDA Bull.1000,t.6,6
<b>New Mexico</b>							
Curry and Roosevelt Cos. <sup>r</sup>	1924-28	125	60	10.6	3.0	7.5	AES Bull.187,p.6; fig.10; t.8
Elephant Butte Irrigation Project	1926-27	35	492	124.0	49.9	74.1	AES Ext.Cir.97,pp.5,10; t.3; fig.6
<b>North Carolina</b>							
East Central	1930-34	147	366	n.a.	45.6	n.a.	AES Bull.306,t.22,41-3
Johnson Co.	1923	54	436	154.0	66.7	65.3	USDA <sup>b</sup>
Johnson and Cumberland Cos.	1924	20	259	129.8	68.1	61.6	AES Bull.306,t.22,41-3
Northampton Co.	1927	20	407	114.2	59.3	54.9	AES Bull.306,t.22,41-3
<b>Oklahoma</b>							
Grady Co.	1923	51	139	49.4	25.3	24.1	USDA <sup>b</sup>
McIntosh Co.	1923	52	93	60.2	39.0	21.2	USDA <sup>b</sup>
Tillman Co.	1929	78	268	n.a.	6.0 <sup>q</sup>	n.a.	AES Bull.208,t.LI
Tillman Co.	1931	67	261	n.a.	5.0 <sup>q</sup>	n.a.	AES Bull.208,t.LI
Washita Co.	1929	70	241	n.a.	9.1 <sup>q</sup>	n.a.	AES Bull.208,t.LI

South Carolina							
Anderson Co.	1918	89	248	131	75	56	USDA Bull.1000,t.5,6
Anderson Co.	1919	74	286	140	80	60	USDA Bull.1000,t.5,6
Anderson Co.	1922	120	204	116	n.a.	n.a.	AES Bull.221,t.4,6
Anderson Area	1924	n.a.	265	118	n.a.	n.a.	AES Bull.230,t.18
Bamberg, Fairfax, and Williston Areas	1929-30	120	260	111.5	62.5	49.0	AES Cir.46,p.6; t.7,18
Barnwell Co.	1918	91	268	136	73	63	USDA Bull.1000,t.5,6
Barnwell Co.	1919	78	248	117	65	62	USDA Bull.1000,t.5,6
Darlington Co.	1923	61	229	142.6	78.0	64.6	USDA <sup>b</sup>
Lexington-Batesbury Area	1924	35	301	135	n.a.	n.a.	AES Bull.233,t.9
Fee Dee	1925-27	90	217 <sup>h</sup>	110	n.a.	n.a.	AES Bull.269,t.18; a-t.34
Piedmont	1927-28	52	290 <sup>h</sup>	113 <sup>h</sup>	n.a.	n.a.	AES Bull.264,t.9
Piedmont	1930	10	351	117.8	65.3	62.5	AES Cir.46,p.4; t.2; p.8; t.8
Southwestern Coastal Plains State	1929-32	250	n.a.	130	n.a.	n.a.	AES Bull.301,pp.5,62
Sumter Co.	1922 <sup>d</sup>	n.a.	n.a.	136	n.a.	n.a.	USDA Dept.Bull.1348,a-t,VIII
	1931-32	120	265	110	n.a.	n.a.	AES Bull.288,pp.6,7; t.22
Texas							
Black Waxy Prairie Corpus Christi	1918 <sup>d</sup>	n.a.	n.a.	57	23	34	USDA Dept.Cir.163,fig.44
Tractor	1926	9	n.a.	n.a.	10.3	n.a.	AES Bull.362,t.3
Horse	1926	12	n.a.	n.a.	14.2	n.a.	AES Bull.362,t.3
Tractor and horse	1928	12	n.a.	n.a.	15.8	n.a.	AES Bull.362,t.3
Corpus Christi	1930	n.a.	n.a.	71.8	18.8	53.0	USDA Misc.Pub.167,t.3
Ellis Co.	1914	114	245	5.7 <sup>j</sup>	n.a.	n.a.	USDA Bull.669,p.1; t.XIV,XV
Ellis Co.	1918	75	176	56	31	26	USDA Bull.1000,t.5,6
Ellis Co.	1919	71	(v)	46	31	15	USDA Bull.1000,t.5,6
Ellis Co.	1923	60	173	54.1	27.7	26.4	USDA <sup>b</sup>
Lubbock Co.	1923	52	183	58.9	15.1	23.8	USDA <sup>b</sup>
Piney Woods	1926-29	27	135	76.5	50.0	26.5	AES Bull.463,p.7; fig.6; t.4
Rockwall and Collin Cos.	1925	23	208	67.8	27.1	40.7	AES Bull.395,t.17,18
Rockwall and Collin Cos.	1926	27	264	69.8	28.1	41.7	AES Bull.395,t.17,18
Rusk Co.	1918	75	185	86	49	37	USDA Bull.1000,t.5,6
Rusk Co.	1919	75	61	64	48	16	USDA Bull.1000,t.5,6
Rusk Co.	1923	55	171	74.8	45.2	29.6	USDA <sup>b</sup>

See footnotes at end of table.

Table F-1.- ABSTRACT OF DATA FROM SECONDARY SOURCES, LABOR ON COTTON - Continued

County or section	Year of study	Number of records	Yield per acre, lint, pounds	Man-hours per acre			Source <sup>a</sup>
				Total	Preharvest	Harvest	
Texas - Continued							
San Angelo							
Tractor	1926	9	n.a.	n.a.	9.8	n.a.	AES Bull.362,t.4
Horse	1926	21	n.a.	n.a.	14.8	n.a.	AES Bull.362,t.4
Tractor and horse	1926	11	n.a.	n.a.	8.8	n.a.	AES Bull.362,t.4
State	1841	n.a.	n.a.	148.6	80.6	68.0	USDA Misc.,Pub.157,t.3
State	1895	n.a.	n.a.	102.4	48.4	56.0	USDA Misc.,Pub.157,t.3
State	1922 <sup>d</sup>	n.a.	n.a.	64	n.a.	n.a.	USDA Dept.,Bull.1348,a-t,VIII

<sup>a</sup>Abbreviations used are as follows: USDA, United States Department of Agriculture; AES, Agricultural Experiment Station; Agr., Agriculture; Inst., Institute; Ext., Extension; Dept., Department; Div., Division; Coll., College; Univ., University; Bull., Bulletin; Cir., Circular; Tech., Technical; Prelim., preliminary; mimeo., mimeographed; Misc., Miscellaneous; Pub., Publication; t., table(s); a-t., appendix table(s).

<sup>b</sup>L. E. Long and C. R. Swinson, Cost of Producing Cotton in Fifteen Selected Areas (prelim. mimeo., July 1925), t. 1, p. 5.

<sup>c</sup>Apparently standards of performance.

<sup>d</sup>Approximate date. In cases where the publications did not state what year data referred to, an approximate date is given - usually 4 years prior to date of publication.

<sup>e</sup>Type or variety of cotton.

<sup>f</sup>175 records of Acala and Pima together in 1928.

<sup>g</sup>Exclusive of thinning and hoeing which was hired on contract at average cost of \$2.60 per acre. First figure represents cotton after cotton, hegari, or fall lettuce; second figure, after alfalfa.

<sup>h</sup>Exclusive of picking which was hired on contract for average of \$4.54 per 100 pounds of lint.

<sup>i</sup>Assumed pounds of seed cotton per acre.

<sup>j</sup>Man-days per acre.

<sup>k</sup>Data from 9 Delta counties in Arkansas and 10 in Mississippi.

<sup>l</sup>For power. Tractors are general-purpose.

<sup>m</sup>Coll. of Agr., Univ. record, Vol. XXII, No. 2, 1927, t. 1, 2.

<sup>n</sup>Ext. Div., Bull. 270, p. 33.

<sup>o</sup>Ext. Div., Bull. 275, t. 8.

<sup>p</sup>See "Delta Coe." under Arkansas.

<sup>q</sup>Unfavorable season.

<sup>r</sup>Dry-land farming.

<sup>s</sup>Does not include chopping.

<sup>t</sup>Average for 369 farms.

<sup>u</sup>Average for the two groups given, "best" and "poorest" farms.

<sup>v</sup>50 pounds per acre of picked cotton, 29 per acre of bolly cotton, and 24 per acre of unginned seed cotton.

<sup>w</sup>n.a.=Data not available.

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