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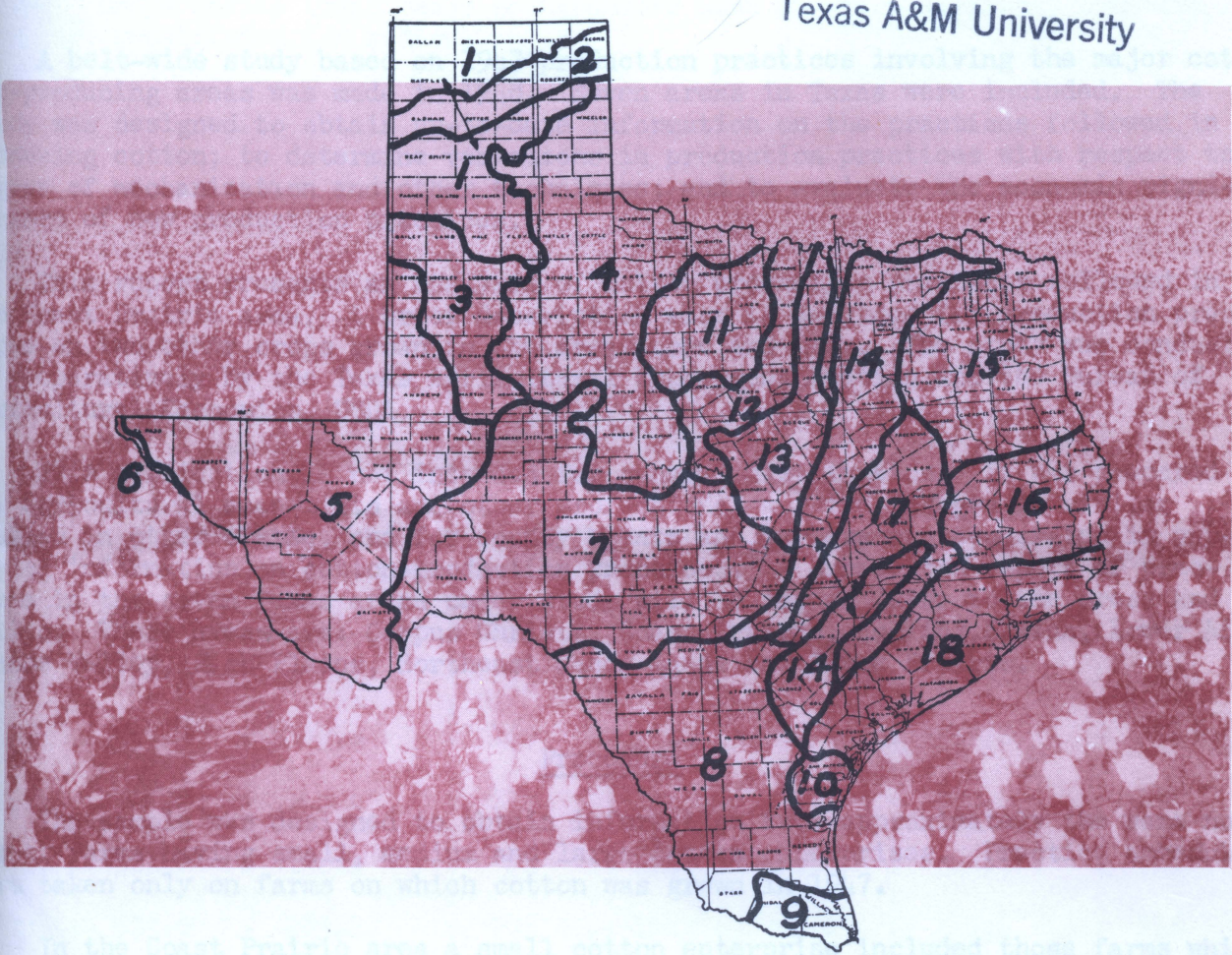
MISCELLANEOUS PUBLICATION NO.34

COTTON PRODUCTION PRACTICES IN THE COAST PRAIRIE AREA, 1947

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Texas Agricultural Experiment Station
 College Station, Texas
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...this publication...

MISCELLANEOUS PUBLICATION NO. 34

Texas Agricultural Experiment Station, The Texas A & M College System
R. D. Lewis, Director, College Station, Texas, September 24, 1949

COTTON PRODUCTION PRACTICES IN THE COAST PRAIRIE AREA, 1947

M. N. Williamson, Jr., and Ralph H. Rogers *

A belt-wide study based on 1947 production practices involving the major cotton-producing areas was made in 1948. Seven areas in Texas were included. The study was designed to obtain up-to-date information on the practices followed in producing cotton; to determine variations in production practices with respect to degree of mechanization and other techniques; and to evaluate the economic significance of new production practices.

This report presents an analysis of cotton production practices followed in the Coast Prairie area. A brief description also is included for production practices on two other crops grown in the area--corn and flax. The study was conducted cooperatively by the Texas Agricultural Experiment Station and the Bureau of Agricultural Economics, USDA.

This publication is not intended for general distribution. It was prepared for agricultural economists and other professional workers engaged in similar studies in other states, and for county agents and farmers who cooperated in supplying information on cotton-production practices. A summarized report of practices in the seven Texas areas under study will be issued later to the press and public. These areas are: Corpus Christi, Coast Prairie, Rolling Plains, Lower Rio Grande Valley, High Plains, Northeast Sandy Lands and Black Prairie.

Procedure

The sample was designed to obtain information from approximately the same number of farms having small, medium and large cotton enterprises. Practice schedules were taken only on farms on which cotton was grown in 1947.

In the Coast Prairie area a small cotton enterprise included those farms which had less than 20 acres in cotton. Farms with a medium-sized cotton enterprise had from 20-49 acres in cotton. Large cotton enterprises consisted of farms having 50 acres or more in cotton. Subsequent reference made to a particular size group refers to the above-mentioned classification.

* Respectively, associate professor, Department of Agricultural Economics and Sociology, Texas Agricultural Experiment Station, and agricultural economist, Bureau of Agricultural Economics, USDA. Assistance in organizing the study and in reviewing this publication was given by C. A. Bonnen, TAES, and E. L. Langsford, USDA.

The information upon which this report is based was obtained through personal interviews with cooperating farmers. Data were obtained for 150 farms, which included 50 small farms, 51 medium-sized farms and 49 large farms.

Trends in Acreage, Yield and Production of Cotton, 1928-48

Acreage of cotton in the Coast Prairie area has declined sharply since 1933 when the cotton adjustment programs were initiated, Table 1. The decline was given further impetus during the latter part of World War II and the immediate postwar years because of relatively high prices of labor and high labor requirements for cotton. Crops having lower labor requirements such as grain sorghums, corn and flax were substituted for cotton.

Table 1. Estimated acreage, yield and production of cotton, Coast Prairie area, 1928-48

Year	Acres ^{1/}	Production	Yield	Year	Acres ^{1/}	Production	Yield
	: Thousand	: Thousand	: Pounds		: Thousand	: Thousand	: Pounds
		: bales ^{2/}				: bales ^{2/}	
1928	: 662.3	: 348.8	: 253	:: 1938	: 406.4	: 158.4	: 187
1929	: 688.0	: 97.1	: 68	:: 1939	: 400.2	: 176.2	: 211
1930	: 684.9	: 344.8	: 242	:: 1940	: 400.4	: 254.9	: 304
1931	: 730.1	: 367.4	: 242	:: 1941	: 348.9	: 82.5	: 114
1932	: 667.2	: 195.9	: 141	:: 1942	: 369.0	: 125.4	: 163
1933	: 730.8	: 276.1	: 223	:: 1943	: 336.9	: 218.3	: 310
1934	: 498.7	: 173.4	: 167	:: 1944	: 302.6	: 117.2	: 186
1935	: 526.8	: 145.4	: 132	:: 1945	: 328.2	: 126.6	: 185
1936	: 528.9	: 100.4	: 91	:: 1946	: 321.5	: 58.0	: 87
1937	: 577.0	: 283.4	: 235	:: 1947	: 342.0	: 154.4	: 216
				:: 1948	: 348.5	: 197.6	: 271

^{1/} Acreage in cultivation, July 1.

^{2/} 500 lb. gross weight bales.

Source: USDA Agricultural Statistics, and Crops and Markets.

Distribution of Farms by Size

Distribution of cotton farms, acreage of cotton and production by size of cotton enterprise in 1944 are listed in Table 2. Although small farms made up 52 percent of the total number of farms growing cotton, they accounted for only 23 percent of the total acreage and production.

Table 2. Distribution of farms, acreage of cotton and production by size of cotton enterprise, 1944

Size group (Acres in cotton)	:Number of farms		:Cotton acreage		:Cotton production		:Percent :of farms :having :tractors
	:Number:	:Percent :of :total	:Acres:	:Percent :of :total	:Bales:	:Percent :of :total	
Small, under 20	: 5597	: 51.8	: 68,389	: 22.6	: 26,498	: 22.6	: 29.8
Medium, 20-49	: 4339	: 40.1	: 146,158	: 48.3	: 56,395	: 48.1	: 70.1
Large, 50 & over	: 879	: 8.1	: 88,058	: 29.1	: 34,353	: 29.3	: 95.7
Total	:10,815	: 100.0	:302,605	: 100.0	:117,246	: 100.0	: 51.3

Source: Special Cotton Report, U. S. Census, 1945, and TAES Circular 117.

Land, Livestock and Labor Organizations

The 1947 land, livestock and labor organizations are shown in Table 3. As previously mentioned, farms were classified and data tabulated on the basis of size of cotton enterprise.

Small Cotton Farms. The small farms averaged 164 acres with 46 acres in cropland. The usual range in cropland was from 30 to 60 acres. However, a few farms were much smaller and a few considerably larger. The small farms had an average of 24 percent of the cropland in cotton, 52 percent in corn, 13 percent in sorghums and 11 percent in miscellaneous crops such as peas, watermelons and peanuts. A large proportion of the small farms were located in the sandy section of the Coast Prairie in Colorado and Austin Counties. For this reason, small acreages of watermelons and peanuts were reported on a number of farms. Other land, comprising 72 percent of total land, included pasture land, homestead, and the like, the major portion of which was pasture.

Some workstock were reported on over 60 percent of the small farms, Table 3. Milk cows were reported on all farms except two. Other cows, other cattle, hogs and chickens made up the remaining livestock reported on the majority of small farms. These farms were operated by one family which usually provided 2 available workers. Seasonal labor performed part of the cotton hoeing and harvesting operation.

Medium-Sized Cotton Farms. The medium-sized farms averaged 128 acres with 68 acres in cropland. The usual range in cropland was from 50 to 80 acres. However, a few farms were considerably larger and a few much smaller. An average of 50 percent of the cropland was in cotton and 35 percent in corn. The remaining 15 percent of cropland was devoted to such crops as sorghums, flax, clover and rotated pasture. Milk cows, other cattle, hogs and chickens made up the principal types of livestock found on medium-sized farms. Less than one-third of the farms reported workstock. Only a small proportion of these farms reported sharecroppers or hired hands. Ordinarily, they were operated by one family which usually had 2 available workers.

Large Cotton Farms. Farms with 50 acres or more in cotton ranged from 80 to 789 acres in size and averaged 184 acres, Table 3. Cropland accounted for an average of 79 percent of total land and ranged from 60 to 518 acres. An average of 66

percent of the cropland was in cotton, 12 percent in corn and 12 percent in flax. Flax was grown on only one-third of the farms. Such crops as sorghums, clover and hay made up the remaining 10 percent of the cropland. Milk cows, other cattle, hogs and chickens were the principal types of livestock found on most large farms. Less than one-fourth of the farms maintained workstock.

Table 3. Land, livestock and labor organization ^{1/}

Items	Size groups ^{2/}								
	Small			Medium			Large		
	Farms :rptg.:	Aver- :age:	Usual :range:	Farms :rptg.:	Aver- :age:	Usual :range:	Farms :rptg.:	Aver- :age:	Usual :range:
	:Pct.:	:Acres:		:Pct.:	:Acres:		:Pct.:	:Acres:	
Land	:	:	:	:	:	:	:	:	:
Total land:	: 100 :	164 :	70-260 :	100 :	128 :	70-160 :	100 :	184 :	100-220 :
Cropland	: 100 :	46 :	30-60 :	100 :	68 :	50-80 :	100 :	146 :	90-150 :
Other land	: 100 :	118 :	40-200 :	100 :	60 :	20-80 :	100 :	38 :	10-70 :
Cropland:	:	:	:	:	:	:	:	:	:
Cotton	: 100 :	11 :	8-16 :	100 :	34 :	25-40 :	100 :	97 :	50-100 :
Corn	: 100 :	24 :	15-30 :	100 :	24 :	15-30 :	73 :	17 :	10-25 :
Grain sorghum	: 46 :	5 :	2-10 :	27 :	4 :	1-10 :	37 :	3 :	2-10 :
Sweet sorghum	: 21 :	1 :	1-4 :	14 :	1 :	5-12 :	20 :	2 :	3-10 :
Flax	: - :	- :	- :	4 :	1 :	15-20 :	33 :	18 :	25-45 :
Clover	: - :	- :	- :	4 :	1 :	10-15 :	16 :	3 :	15-35 :
Other crops	: 42 :	5 :	5-10 :	41 :	3 :	5-20 :	22 :	6 :	5-20 :
	:Farms :rptg.:	:Aver- :age:	Usual :range:	:Farms :rptg.:	:Aver- :age:	Usual :range:	:Farms :rptg.:	:Aver- :age:	Usual :range:
	:Pct.:	:Number:		:Pct.:	:Number:		:Pct.:	:Number:	
Livestock	:	:	:	:	:	:	:	:	:
Workstock	: 62 :	1.9 :	2-4 :	29 :	0.7 :	2-4 :	22 :	0.7 :	2-3 :
Milk cows	: 96 :	5.0 :	3-5 :	94 :	4.4 :	2-4 :	94 :	3.0 :	1-3 :
Other cows	: 50 :	8.9 :	5-20 :	29 :	4.9 :	2-20 :	24 :	3.1 :	3-15 :
All other cattle	: 69 :	7.8 :	5-15 :	53 :	5.7 :	2-10 :	53 :	7.7 :	2-10 :
Brood sows	: 42 :	0.7 :	1-2 :	33 :	0.6 :	1-2 :	29 :	0.6 :	1-2 :
Other hogs	: 79 :	3.4 :	2-4 :	55 :	4.1 :	3-5 :	51 :	1.9 :	2-4 :
Hens and pullets	: 98 :	182 :	100-200 :	94 :	172 :	100-200 :	88 :	102 :	50-150 :
Sheep	: 6 :	1.0 :	- :	8 :	2.5 :	- :	2 :	0.4 :	- :
Saddle horses	: 8 :	0.1 :	- :	4 :	0.1 :	- :	8 :	0.1 :	- :
	:Farms :rptg.:	:Aver- :age:	Usual :range:	:Farms :rptg.:	:Aver- :age:	Usual :range:	:Farms :rptg.:	:Aver- :age:	Usual :range:
	:Pct.:	:Number:		:Pct.:	:Number:		:Pct.:	:Number:	
Labor	:	:	:	:	:	:	:	:	:
Operator:	:	:	:	:	:	:	:	:	:
Families	: 100 :	1.0 :	1 :	100 :	1.0 :	1 :	100 :	1.0 :	1 :
Available workers	: 100 :	2.7 :	2 :	100 :	2.4 :	2 :	100 :	2.3 :	2 :
Cropper:	:	:	:	:	:	:	:	:	:
Families	: - :	- :	- :	4 :	0.2 :	1 :	8 :	0.1 :	- :
Available workers	: - :	- :	- :	4 :	0.2 :	1 :	8 :	0.3 :	- :
Hired hand:	:	:	:	:	:	:	:	:	:
Families	: - :	- :	- :	8 :	0.1 :	1 :	29 :	0.4 :	1 :
Available workers	: - :	- :	- :	8 :	0.2 :	1 :	29 :	1.2 :	2-4 :

^{1/} Usual range or usual number in table relates only to those farms reporting.

^{2/} 50 small farms, 51 medium-sized farms and 49 large farms.

The large farms had one operator family which usually had 2 available workers. Only four of the farms had sharecroppers, while 24 farms, or 29 percent of the total, had hired hands.

On most of the large and medium-sized farms cotton occupied a larger acreage than any other crop, whereas on many of the smaller farms, corn occupied more land than cotton. The proportion of cropland devoted to cotton was 21, 51 and 66 percent on small, medium and large farms, respectively.

Land Tenure

Over half of the land was operated under lease either on one-third or one-fourth basis or for cash rent, but principally by the former. A more complete picture of the tenure situation may be obtained from Table 4.

Table 4. Proportion of land operated by owners and tenants, and proportion of operators who were tenants or owners

	Size groups			All farms
	Small	Medium	Large	
	Percent	Percent	Percent	Percent
Total land owned	43.0	53.4	48.1	46.8
Total land rented	57.0	46.6	51.9	53.2
Farm operators who were owners only	52.0	39.2	24.5	38.7
Farm operators who were tenants only	40.0	45.1	51.0	45.3
Farm operators who were combination tenant and owner	8.0	15.7	24.5	16.0

Under the usual third and fourth tenure arrangements for cotton, corn and grain sorghums, the tenant furnished all power and labor for crops. Seed, fertilizer and poison were paid for by the tenant. Ginning expenses for cotton were divided, the tenant paying three-fourths and the landlord one-fourth. The tenant in turn received three-fourths of the cotton crop, the landlord one-fourth.

The tenant usually harvested all of the corn crop and received two-thirds of it, the landlord one-third. The combining and hauling expenses for grain sorghums were divided, the landlord usually paying one-third and the tenant two-thirds. The tenant received two-thirds of the crop and the landlord one-third.

Farm Machinery

The farm machinery reported by size of farm is listed in Table 5. Pick-up trucks were not common on the farms of any size-group, but nearly 50 percent of the large farms reported a pick-up. Tractors were reported on practically all of the medium-sized and large farms, some of the larger farms reporting more than one tractor. Only 68 percent of the small farms reported tractors--workstock providing the power on the remainder of the farms.

Table 5. Farm machinery reported per farm by size of cotton enterprise

Item	Size group								
	Small			Medium			Large		
	Farms:	Aver-:	Usual:	Farms:	Aver-:	Usual:	Farms:	Aver-:	Usual:
	rptg.:	age :		rptg.:	age :		rptg.:	age :	
	Pct. :	Number	Pct. :	Number	Pct. :	Number	Pct. :	Number	
Pick-up 1/4 to 3/4 ton	16.0:	.16:	-	24.0:	.24:	0-1	46.9:	.47:	0-1
Truck 1 to 2 tons	2.0:	.02:	-	2.0:	.02:	-	6.1:	.06:	0
Tractors	68.0:	.70:	1	98.0:	1.04:	1	98.0:	1.57:	1
Breaking plows	74.0:	.84:	1	24.0:	.24:	0-1	38.8:	.49:	0-1
Middle busters:									
4-row-tractor	-	-	-	-	-	-	2.0:	.02:	-
3-row-tractor	-	-	-	-	-	-	8.2:	.08:	-
2-row-tractor	26.0:	.40:	0-1	64.7:	.71:	0-1	93.9:	1.27:	1
1-row-tractor	40.0:	.42:	0-1	39.2:	.39:	0-1	16.3:	.16:	-
1-row-horse	24.0:	.30:	0-1	-	-	-	-	-	-
Disks:									
Tandem	24.0:	0.26:	0-1	72.5:	.73:	1	83.7:	.88:	1
Single disk	16.0:	.16:	-	2.0:	.02:	-	10.2:	.14:	-
Row disk attachment	26.0:	.26:	0-1	52.9:	.61:	0-1	83.7:	1.35:	1
Section harrows	58.0:	.58:	0-1	92.2:	.92:	1	98.0:	1.20:	1
Planters:									
4-row-tractor	-	-	-	-	-	-	12.2:	.14:	-
2-row-tractor	46.0:	.52:	0-1	98.0:	1.02:	1	87.8:	.94:	1
1-row-tractor	22.0:	.22:	0-1	3.9:	.04:	-	-	-	-
1-row-horse	50.0:	.50:	0-1	3.9:	.06:	-	2.0:	.02:	-
Cultivators:									
4-row-tractor	.0:	.0 :	-	-	-	-	14.3:	.20:	-
2-row-tractor	46.0:	.54:	0-1	98.0:	1.04:	1	93.9:	1.29:	1
1-row-tractor	22.0:	.22:	0-1	2.0:	.02:	-	.0:	.0 :	-
1-row-horse	50.0:	.58:	0-1	3.9:	.06:	-	2.0:	.02:	-
Mowers	64.0:	.68:	0-1	56.9:	.57:	0-1	51.0:	.51:	0-1
Haybalers	6.0:	.06:	-	5.9:	.06:	-	2.0:	.02:	-
Combines	.0:	.0 :	-	7.8:	.08:	-	20.4:	.20:	-
Cotton poison machines	22.0:	.22:	-	51.0:	.51:	0-1	59.2:	.61:	0-1
Stalk cutters	70.0:	.72:	1	86.2:	.86:	1	93.9:	1.10:	1
Trailers	68.0:	.80:	1	96.1:	1.33:	1	89.8:	1.92:	2
Rollers	8.0:	.08:	-	43.1:	.43:	0-1	38.8:	.45:	0-1
Floats	0.0:	.0 :	-	5.9:	.06:	-	24.5:	.29:	-
Cotton choppers	2.0:	.02:	-	9.8:	.10:	-	30.6:	.31:	0-1
Fertilizer distributor	26.0:	.30:	-	15.7:	.18:	-	6.1:	.06:	-
Hay rakes	40.0:	.40:	0-1	9.8:	.10:	-	8.2:	.10:	-
Terracer or ditcher	6.0:	.08:	-	11.8:	.14:	-	12.2:	.12:	-
Wagons	38.0:	.40:	0-1	3.9:	.04:	-	10.2:	0.16:	-

Breaking plows were common only on small farms. Middle busters, harrows, planters, cultivators, stalk cutters and trailers were common in varying numbers and sizes on all farms. Over 50 percent of the farms reported mowers.

Some indication as to the age of farm machinery may be obtained from Table 6 in which all tractors are grouped according to age. It is interesting to note that the percentage of old tractors, 10 years old and over, is highest on the larger farms and lowest on the smaller farms. This is believed to be due to the fact that small farms have been slower than larger farms in making the shift from horse-power to tractor-power.

Table 6. Tractor ages by size of cotton enterprise

Size of cotton enterprise	Age in years									
	1-3		4-6		7-9		10 and over		All tractors	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Small	11	31	8	23	10	29	6	17	35	100
Medium	5	9	11	21	11	21	26	49	53	100
Large	10	13	6	8	11	14	50	65	77	100
All sizes	26	16	25	15	32	19	82	50	165	100

Cotton Practices

Planting and Spacing Practices

A summary of the planting practices by size of farm is presented in Tables 7 and 8.

An average of over 50 percent of the planting seed was purchased on all sizes of farms. Over 75 percent of the purchased seed was delinted, and over 65 percent was treated. Only a small proportion of home-grown seed was treated or delinted. Very little variation existed by size of farm.

The usual rate of planting delinted seed was 15 to 20 pounds per acre. The rate of planting non-delinted seed was only slightly higher--20 to 25 pounds per acre, Table 7. Deltapine, Rowden and Stoneville were the principal varieties of cotton grown. Most farmers planted seed that was first or second year from the breeder.

As all of the cotton was planted solid in the drill, the majority of farmers used some method of spacing, Table 8. Although a few farmers used machine choppers, hand chopping was the common method of spacing. The usual spacing was 8 inches. The majority of the farmers planted on 38 or 40-inch rows.

Fertilizer, Poison and Defoliation Practices

Fertilizer. Only 16 farms reported the use of commercial fertilizer on a total of 461 acres. The principal analysis of fertilizer used were 4-8-4, 4-12-4 and 5-10-5. Three farms used super-phosphate. The usual amount applied was 200 to 400 pounds per acre. The effect of fertilizer on yields could not be determined as most farmers applied it on only a part of the cotton acreage and separate yields could not be determined.

Poison. Insect infestation was relatively light in 1947 principally because rainfall was below normal during June and July. Only 31 percent of the planted cotton acreage was poisoned on the small farms. On the medium-sized farms, 53 percent of the acreage was poisoned at least once, while poison was used on 28 percent of the acreage on large farms. Calcium arsenate, DDT and sulphur were the principal types of poison used. They were used either individually or in combination. The usual amount applied was 10 pounds per application.

Table 7. Planting seed, seed treatment and rate of seeding

Item	(Acres)	Size group			All farms
		Small	Medium	Large	
Total acres in sample	(Acres)	529	1753	4595	6877
Proportion of acres replanted	(Percent)	17	11	3	6
Proportion of farms using:					
Home-grown seed only	(Do.)	34	12	6	17
Purchased seed only	(Do.)	58	53	63	58
Both purchased and home-grown	(Do.)	8	35	31	25
Proportion of seed delinted:					
Home-grown seed	(Percent)	5	17	6	9
Purchased seed	(Do.)	76	76	81	80
All planting seed	(Do.)	47	53	59	57
Proportion of seed treated:					
Home-grown seed	(Percent)	-	18	2	7
Purchased seed	(Do.)	71	69	65	66
All planting seed	(Do.)	42	49	47	47
Rate of seeding - delinted seed					
Average amount per acre	(Pounds)	20	19	18	19
Usual amount per acre	(Do.)	20-25	15-20	15-20	15-20
Rate of seeding - non-delinted seed					
Average amount per acre	(Pounds)	21	22	22	21
Usual amount per acre	(Do.)	20-25	20-25	20-25	20-25
Proportion of farms planting following varieties:					
Stoneville only	(Percent)	36	8	2	15
Rowden only	(Do.)	28	31	6	22
Deltapine only	(Do.)	2	39	76	39
Qualla only	(Do.)	14	2	2	6
Other and mixed varieties	(Do.)	20	20	14	18
Proportion of farms planting seed:					
1 to 2 years from breeder	(Percent)	88	98	96	94
3 years or more from breeder	(Do.)	12	2	4	6

Table 8. Method of spacing cotton

Item	Size group			All farms
	Small	Medium	Large	
Cotton planted (Acres)	529	1753	4595	6877
Method of spacing planted solid <u>1/</u>				
No spacing				
Proportion of farms (Percent)	4	-	2	2
Proportion of acreage (Do.)	6	-	5	4
Hand chopped				
Proportion of farms (Percent)	96	86	92	91
Proportion of acreage (Do.)	92	88	89	89
Machine chopped				
Proportion of farms (Percent)	2	20	16	13
Proportion of acreage (Do.)	2	12	6	7
Usual spacing in row				
Hand chopped (Inches)	8	8	8	8
Machine chopped (Do.)	8	6	6-8	6-8
Proportion of farms reporting				
36-37 inch rows (Percent)	16	8	-	8
38-39 inch rows (Do.)	41	41	43	42
40 inch rows (Do.)	29	47	53	43
42 inch rows (Do.)	14	4	4	7

1/ 9 farms used a combination of methods of spacing.

Since the study was made, new chemical insecticides have been introduced and are used in the area with better control of cotton insects. The new insecticides used are toxaphene and benzene hexachloride.

The principal types of cotton insects found in the area are flea hoppers and boll weevils. Figures shown in Table 9 give an indication as to the number of years out of 10 in which poison was used.

Table 9. Number of years during last 10 poison was used.

Number of years	Size group		
	Small	Medium	Large
	Percent	Percent	Percent
0	-	-	-
1	5	3	2
2	19	3	3
3	13	8	3
4	5	14	8
5	11	3	11
6	3	8	-
7	3	8	9
8	16	36	13
9	11	3	30
10	14	14	22

Defoliation. Two of the large farms reported defoliation on 300 acres with good results. Thirty pounds of calcium cyanamid were applied by plane. One block of 150 acres was defoliated on August 25 and the other on September 15.

Labor and Machinery Hired and Wages Paid for Specific Operations

Labor. Considerable variation existed between size-groups as to the amount of cotton chopping, picking and snapping done by non-farm residents in 1947, Table 10. Most of the labor on the small farms was performed by the operator and his family. With the exception of regular farm work, as the size of cotton enterprise increased the proportion of hand operations performed by outside labor increased.

Wages. The usual wage rates for specific operations are listed in Table 11. Although wide variations existed in wage rates, those shown are the more common. Rates for cotton picking ranged from \$1.75 to \$4.00 per 100 pounds of seed cotton, depending on yield, competition for labor and time of year. Day rates varied from \$3.00 to \$6.00 depending upon type of labor, competition for labor and type of work.

Machinery. Very few farmers hired machinery for operations performed on the cotton crop. Exceptions included the hiring of a duster for poisoning on 5 farms, and a plane for defoliation on 2 farms.

Combining of grain sorghums, row binding of forage sorghums and baling of hay was hired on most farms growing those crops, because very few had the necessary harvesting equipment. A small number of farmers hired mechanical corn pickers to harvest the crop. Only a small proportion of the farmers did custom work for others with their own equipment.

Average Yield, Method of Harvest and Gin Turn-out

The average yield of cotton, method of harvest and gin turn-out are listed in Table 12. The average yield of 206 pounds of lint per acre on farms studied was 8 pounds higher than the 1937-46 average yield in the Coast Prairie area.

Practically all of the cotton was harvested by hand picking. All farms picked over the cotton acreage twice and some as many as three times.

The gin load or quantity of seed cotton and trash required per 500-pound gross weight bale of lint varied only slightly between size-groups of farms, Table 12. Hand-picked cotton on the average turned out 33 percent lint, 58 percent seed and 9 percent trash. Hand-snapped cotton turn-out was 25 percent lint, 39 percent seed and 36 percent trash.

Hand picking per 100 pounds of seed cotton:	2.50 - 3.00
Hand snapping per 100 pounds of seed cotton:	2.00
Regular farm work:	4.00
Truck drivers:	5.00

Table 10. Proportion of labor performed by non-farm residents

Item	Size group			All farms
	Small	Medium	Large	
	Percent of farms	Percent of farms	Percent of farms	
Cotton chopping:				
0-25 percent	68	33	19	40
26-50 percent	10	26	16	17
51-75 percent	8	4	12	8
76-100 percent	14	37	53	35
Cotton picking:				
0-25 percent	50	20	8	26
26-50 percent	22	24	14	20
51-75 percent	4	11	10	10
76-100 percent	24	41	68	44
Cotton snapping:				
0-25 percent	100	94	90	94
26-50 percent	-	2	4	2
51-75 percent	-	-	2	1
76-100 percent	-	4	4	3
Regular farm work:				
0-25 percent	90	96	98	95
26-50 percent	8	2	2	4
51-75 percent	2	2	-	1
76-100 percent	-	-	-	-

Table 11. Usual wage rates for specific operations

Item	Dollars
Cotton chopping:	
Per day	\$ 4.00
Per acre	2.00 - 4.00
Cotton picking per 100 pounds of seed cotton:	2.50 - 3.00
Cotton snapping per 100 pounds of seed cotton:	2.00
Regular farm work:	
Per day	4.00
Tractor drivers:	
Per day	5.00

Table 12. Cotton harvesting practices

Item		Size group			All sizes
		Small	Medium	Large	
Acre yield of lint	(Pounds)	225	228	197	206
Proportion of cotton:					
Hand picked	(Percent)	100	99	96	97
Hand snapped	(Do.)	-	1	4	3
Proportion harvest hired:					
Picking	(Percent)	53	68	91	81
Snapping	(Do.)	-	83	91	90
Seed cotton and trash per bale:					
Hand picked	(Pounds)	1490	1445	1415	1450
Hand snapped <u>1/</u>	(Do.)	-	-	-	1950
Cotton seed per bale:					
Hand picked	(Pounds)	883	823	800	835
Hand snapped	(Do.)	-	-	-	765
Percent turn-out:					
Hand picked					
Lint	(Percent)	32	33	34	33
Seed	(Do.)	59	57	57	58
Hand snapped <u>1/</u>					
Lint	(Percent)	-	-	-	25
Seed	(Do.)	-	-	-	39

1/ Sample on total of 11 bales for all size-groups.

Labor and Power Requirements

Cotton

A tabulation of the number of farms using different types of power and equipment on cotton is shown in Table 13. Two-row tractor equipment was by far the most common type of equipment, with 77 percent of the farms reporting its use. It may be noted that none of the farms reported a combination of types of power.

Table 13. Number of farms using different types of power

Type of power and equipment	Size group			All farms
	Small	Medium	Large	
	Number	Number	Number	Number
4-row tractor	-	-	6	6
2-row tractor	23	50	43	116
1-row tractor	11	1	-	12
Horse	16	-	-	16
Total	50	51	49	150

The labor and power used in the performance of the usual operations in the production of cotton are listed in Table 14. Requirements are shown only for 2-row tractor equipment and 1-row horse equipment. Although 12 farms reported the use of 1-row tractor equipment, 9 of these farms were located in the vicinity of Weimar in Colorado County. Soils in that community are not typical of the Coast Prairie. Therefore, requirements are not shown for 1-row tractor equipment.

A large portion of the 1-row horse-drawn equipment was used on the sandy soils and river bottoms in the Coast Prairie area. The power and labor requirements for 1-row horse-drawn equipment shown in Table 14 are more typical of the sandy soils than of the heavier soils. Operations on heavier soils require more power.

Seedbed Preparation. Although variation existed because of such things as the preceding crop, type of soil and equipment available; the usual seedbed preparations for two types of equipment are shown in Table 14. Flatbreaking was practiced on half of the farms using horse equipment, but on only 10 percent of the 2-row tractor farms. Farms using horse equipment harrowed the land that was flatbroken. Bedding was a common operation on all farms regardless of the type of power. The majority of tractor farms disked the land once either with a tandem disk or a row-disk attachment. The majority of the tractor farms also harrowed the land before planting.

Table 14. Labor and power required per acre for the usual operations in producing cotton

Usual operations	2-row tractor-drawn equipment			1-row horse-drawn equipment		
	Hours			Hours		
	Times	per acre		Times	per acre	
	over	Man	Tractor	over	Man	Horse
Seedbed preparation:						
Flatbreak	-	-	-	0.50	1.67	3.34
Disk	1.00	0.31	0.31	-	-	-
Bed	1.00	0.59	0.59	1.00	2.22	4.44
Harrow	1.00	0.29	0.29	0.50	0.50	1.00
Plant	1.10	0.58	0.58	1.10	1.84	3.68
Rolling	0.55	0.10	0.10	-	-	-
Cultivate	6.00	2.88	2.88	5.00	8.35	16.70
Chop and hoe	2.00	10.00	-	2.00	10.00	-
Poison	0.70	0.07	0.07	0.70	0.47	-
Total preharvest		14.82	4.82		25.05	29.16
Harvesting						
Picking	-	31.21	-	-	31.21	
Hauling	-	1.50	(1.50) 1/	-	1.50	(1.50) 1/
Total harvest		32.71	(1.50) 1/		32.71	(1.50) 1/
Cut stalks	-	-	-	1.00	1.25	2.50
Cut stalks and disk	1.00	0.50	0.50	-		
Total all operations		48.03	6.82		59.01	31.66

1/ Car and trailer.

Planting. Planting was usually performed during the latter part of March and in April. A few farmers planted as late as the first part of May. About 10 percent of the acreage was replanted in 1947. About half of the tractor farms used a roller after planting, while none of the horse farms used a roller.

Cultivation. Cultivation on the horse farms varied from 3 to 8 times, including running of the middles with sweepstocks on some farms. The usual number of times over was 5. The range in cultivations on tractor farms was from 4 to 11 times. The reason for the larger number of cultivations on tractor farms was probably because the horse farms were on less productive sandy soils while the tractor farms were on the dark, heavier soils that were more productive and provided more weed growth. Unpublished data of the Texas Agricultural Experiment Station indicate that the number of cultivations in 1947 was about normal.

Hoe Labor. On the majority of farms cotton was chopped or spaced once and hoed once. Machine choppers were used on only 13 percent of the farms using 2-row tractor equipment. The usual amount of hoe labor, 10 hours per acre required in 1947, was between 1 and 2 hours below normal according to unpublished data mentioned above. This was principally due to a slight increase in acreage covered per man because of below-normal rainfall in June and July that retarded the growth of weeds and grass.

Poisoning. As previously mentioned, below-normal rainfall for the area in June and July retarded the insect infestation in 1947. Only about 36 percent of the cotton acreage was poisoned. This acreage was covered twice. As indicated in Table 9 on poisoning practices, the amount of poisoning performed each year is extremely variable as it depends upon rainfall and insect infestation. On 2-row tractor farms, 6 and 8-row dusters were the common equipment used to distribute poison. Hand dusters were used exclusively on the farms using horse-drawn equipment.

Harvesting. As mentioned earlier, 97 percent of the cotton was hand picked, and only 3 percent was snapped in 1947. All cotton is normally hand picked. For this reason, harvesting requirements shown in Table 14 are based on hand picking only. The usual requirements are based on an average lint yield of 206 pounds per acre. An average of 200 pounds of picked seed cotton was gathered by each laborer in 10 hours. Cotton was hauled by car and trailer on 70 percent of the farms. As the 1947 yield per acre of lint was only 3 pounds above the 1937-46 average, the total harvesting labor requirements were about normal.

Cotton harvest began the latter part of July and was completed on most farms by the first part of October. A large part of the area is under pink bollworm control regulations. These regulations require that all cotton plants be destroyed around October 15.

Destroy Stalks. Stalks were cut with a 1-row stalk cutter on farms using horse-drawn equipment. As a large proportion of these farms were situated outside the pink bollworm control area, the common practice was to cut stalks only. As most of the farms using 2-row tractor equipment were situated within the control area, stalks were cut and turned under. Cotton stalks on about 60 percent of the cotton land were cut and disked under in one operation. Stalks on the remainder of the land were cut as a separate operation and turned under with a disk or middle buster.

Total Labor and Power Requirements. The usual operations performed in producing cotton on farms using 2-row tractor equipment required 48 hours of man labor and 6.8 hours of tractor work per acre. The usual production requirements on farms

using 1-row horse-drawn equipment were 59 hours of man labor and 31.7 hours of horse work per acre. Most of the horse farms were situated on sandy land. Man and horse hours would be larger on the dark, heavier soils.

When comparing the two types of equipment, the 2-row tractor equipment showed a saving of 11 hours of man labor per acre over 1-row horse-drawn equipment, Table 14.

Variation from Usual Requirements. Rates of performance, power and labor required, proportion of farms using and proportion of cotton acreage covered with different implements on farms studied are listed in Table 15. Data shown in this table indicate variations from the usual operations along with rate of performance for different implements.

Corn

Corn was the other principal crop on most cotton farms. Corn accounted for 52 percent of the cropland on small farms, 35 percent on medium-sized farms and 12 percent on large farms.

The range in yield per acre on 72 farms was from 1 to 50 bushels. The average yield was 18 bushels per acre, while the 5-year average yield was reported to be 22 bushels. Most of the corn was fed on the farm.

Wide variation existed in the variety of corn planted. A hybrid that is well adapted to the area has not yet been developed. Only 16 of the 72 farms studied planted a hybrid on the entire corn acreage, while 9 more used some hybrid seed. The usual rates of planting were from 5 to 8 pounds per acre. Planting was usually done during the latter part of February and in March. The majority of the farms purchased all or part of the planting seed. Fifty-two percent of the farms used treated seed.

The amounts of labor and power required per acre for the usual operations performed in producing corn are listed in Table 16. Two-row tractor equipment was used on 55 of the 72 farms on which records were obtained. Six of the farms used 1-row tractor equipment and 11 farms used a combination of horse and tractor equipment.

In seedbed preparation, only 25 percent of the land was flatbroken, usually with a moldboard plow. Land that was not flatbroken was bedded twice before planting. All of the land was usually disked either with a tandem disk or a row-disk attachment, and about three-fourths of the land was harrowed. Only 3 of the 2-row tractor farms used a commercial fertilizer.

Nearly 20 percent of the corn acreage was replanted in 1947. The number of cultivations varied from 2 to 5 times with the usual number from 3 to 4. About half of the acreage was hoed over once to eliminate grass and weeds.

Harvesting was usually done during the latter part of September and in October. The usual harvesting crew was 3 men with a tractor and trailer as hauling equipment. On some farms corn tops were cut and saved for feed. This operation has not been included in the usual operations. On the majority of farms corn stalks were usually cut with a stalk cutter so that seedbed preparation might be started for the next crop. Total labor required for the usual operations in producing corn was 12.2 hours per acre, while 6.8 hours of tractor work were required.

Table 15. Rates of performance, power and labor required, proportion of farms using and proportion of cotton acreage covered with different implements

Operation and implement used	Number of machines in sample	Acres covered per 10 hr. day	Hours per acre once over			Percent of farms using	Percent of cotton acreage covered	Average number of times over
			Man	Trac.	Horse			
<u>Flatbreak</u>						22.6	6.4	1.02
Tractor equipment:								
2-bottom moldboard	12	6.3	1.59	1.59	-	7.3	2.9	1.04
1-bottom moldboard	13	4.6	2.17	2.17	-	8.7	1.8	1.00
6 ft. oneway	2	15.0	0.67	0.67	-	1.3	0.7	1.00
Horse equipment:								
1-bottom moldboard	8	3.0	3.33	-	6.66	5.3	1.0	1.13
<u>Disking</u>						27.4	21.8	1.56
Tractor equipment:								
6 to 7 ft. disk	38	20.0	0.50	0.50	-	24.7	18.9	1.53
Other disks	3	-	-	-	-	2.7	2.9	1.80
<u>Bedding</u>						90.0	94.1	1.24
Tractor equipment:								
3-row middle buster	4	28.0	0.36	0.36	-	2.0	6.7	1.60
2-row middle buster	88	17.0	0.59	0.59	-	56.0	73.1	1.20
1-row middle buster	35	10.0	1.00	1.00	-	23.3	12.8	1.27
Horse equipment:								
1-row middle buster	13	4.8	2.22	-	4.44	6.7	1.2	1.17
Turning plow	3	4.0	2.50	-	5.00	2.0	0.3	1.08
<u>Harrow before planting</u>						70.0	78.9	1.12
Tractor equipment:								
4-section harrow	19	70.0	0.14	0.14	-	12.0	27.7	1.06
3-section harrow	20	50.0	0.20	0.20	-	12.7	19.5	1.23
2-section harrow	59	35.0	0.29	0.29	-	39.3	30.7	1.11
Horse equipment:								
2-section harrow	6	10.0	1.00	-	2.00	4.0	0.6	1.00
1-section harrow	3	7.00	1.43	-	2.86	2.0	0.4	1.00
<u>Row-disk</u>						50.6	71.7	1.85
Tractor equipment:								
2-row disk attachment	74	25.0	0.40	0.40	-	46.0	66.9	1.82
Other row disks	5	-	-	-	-	3.3	4.5	2.36
Horse equipment:								
1-row disk	2	8.0	1.25	-	2.50	1.3	0.3	2.67
<u>Fertilize</u>						14.0	6.7	1.02
Tractor equipment:								
Trailer	4	9.0	2.22	1.11	-	2.7	1.0	1.00
2-row distributor	5	17.0	0.59	0.59	-	3.3	2.3	1.06
Other distributors	5	-	-	-	-	3.3	2.8	1.00

(Continued on next page)

Table 15. Rates of performance, power and labor required, proportion of farms using and proportion of cotton acreage covered with different implements using and proportion of cotton - continued -

Operation and implement used	Number of machines in sample	Acres covered per 10 hr. day	Hours per acre once over			Percent of farms using	Percent of cotton acreage covered	Average number of times over
			Man	Trac.	Horse			
Horse equipment:								
Manure spreader	4	2.5	2.50	-	5.00	2.7	0.4	1.00
Other distributors	3	-	-	-	-	2.0	0.2	1.00
Lay off rows								
Tractor equipment:								
2-row cultivator	8	17.0	0.59	0.59	-	5.3	1.7	1.00
1-row cultivator	5	10.0	1.00	1.00	-	3.3	0.7	1.20
Horse equipment:								
Sweepstock	4	5.0	2.00	-	2.00	2.7	0.7	1.00
1-row buster	1	-	-	-	-	0.7	0.1	1.00
Cultivate beds								
Tractor equipment:								
2-row cultivator	3	21.0	0.48	0.48	-	2.0	1.4	1.00
2-row stalk cutter	2	24.0	0.42	0.42	-	1.3	1.2	1.00
Planting								
Tractor equipment:								
4-row planter	8	37.0	0.27	0.27	-	4.0	14.8	1.00
2-row planter	116	19.0	0.53	0.53	-	77.3	81.3	1.08
1-row planter	12	9.0	1.11	1.11	-	8.0	1.9	1.15
Horse equipment:								
1-row planter	16	6.0	1.67	-	2.33	10.7	2.0	1.11
Rolling								
Tractor equipment:								
4-row roller	13	57.0	0.18	0.18	-	8.7	12.0	1.04
2-row roller	10	35.0	0.29	0.29	-	6.7	5.9	1.02
Other rollers	6	-	-	-	-	4.0	5.8	1.00
Harrow or float								
Tractor equipment:								
8-row float	3	96.0	0.10	0.10	-	2.0	6.1	1.00
6-row float	9	76.0	0.13	0.13	-	5.3	11.4	1.00
4-row float	3	62.0	0.16	0.16	-	2.0	4.8	1.00
Section harrows	7	-	-	-	-	4.7	3.7	1.00
Cultivate								
Tractor equipment:								
4-row cultivator	9	35.0	0.29	0.29	-	4.0	14.8	5.44
2-row cultivator	121	21.0	0.48	0.48	-	77.3	81.3	6.21
1-row cultivator	12	9.0	1.11	1.11	-	8.0	1.8	4.80
Horse equipment:								
1-row cultivator	15	6.0	1.67	-	2.33	10.0	1.9	4.49
Sweepstock	5	3.0	3.33	-	3.33	3.3	5.7	5.00

(Continued on next page)

Table 15. Rates of performance, power and labor required, proportion of farms using and proportion of cotton acreage covered with different implements

- continued -

Operation and implement used	Number of machines in sample	Acres covered per 10 hr. day	Hours per acre once over			Per cent of farms using	Percent of cotton acreage covered	Average number of times over
			Man	Trac.	Horse			
Hoe labor	-	2.0	5.00	-	-	98.7	98.8	2.21
Machine chopping								
2-row chopper	18	20.0	0.50	0.50	-	12.0	7.4	1.00
Poisoning								
Tractor equipment:								
8-row duster	23	105.0	0.10	0.10	-	14.7	17.4	2.06
6-row duster	15	90.0	0.11	0.11	-	10.0	6.9	2.31
5-row duster	11	75.0	0.13	0.13	-	7.3	6.5	2.21
2-row duster	1	-	-	-	-	0.7	0.7	3.00
Hand duster	13	16.0	0.67	-	-	8.7	3.2	1.57
Defoliate								
Plane	2	-	-	-	-	1.3	4.4	1.00
Tractor and 6-row duster	1	-	-	-	-	0.7	0.1	1.00
Picking - hand	-	-	-	-	-	100.0	99.7	2.36
Snapping - hand	-	-	-	-	-	6.0	11.6	1.00
Hauling								
Trailer - car or trac.	104	-	-	-	-	69.3	-	-
Truck	29	-	-	-	-	19.3	-	-
Truck and trailer	10	-	-	-	-	6.7	-	-
Mules and wagon	7	-	-	-	-	4.7	-	-
Cutting stalks								
Tractor equipment:								
2-row stalk cutter	53	24.0	0.42	0.42	-	35.3	33.6	1.00
1-row stalk cutter	4	11.0	0.91	0.91	-	2.7	0.8	1.00
Horse equipment:								
1-row stalk cutter	12	8.0	1.25	-	2.50	8.0	2.4	1.00
Cut stalks and disk								
Tractor equipment:								
2-row stalk cutter and 6 to 7 ft. disk	67	20.0	0.50	0.50	-	43.3	60.5	1.00
Disking								
Tractor equipment:								
6 to 7 ft. disk	19	20.0	0.50	0.50	-	12.7	11.8	1.00
Other disks	4	-	-	-	-	4.6	5.1	1.32
Turn stalks								
Tractor equipment:								
Moldboard plows	5	-	-	-	-	3.3	0.8	1.00
Middle busters	38	-	-	-	-	25.3	29.5	1.00

Table 16. Labor and power required for the usual operations performed in producing corn.

Operation	Times over	2-row tractor-drawn equipment	
		Man	Tractor
Seedbed preparation:			
Bed	2.00	1.18	1.18
Disk	1.00	0.45	0.45
Harrow	1.00	0.29	0.29
Plant	1.20	0.64	0.64
Cultivate	3.50	1.86	1.86
Hoe	0.50	1.38	
Total preharvest		5.80	4.42
Harvest	1.00	6.00	2.00 ^{1/}
Cut stalks	1.00	0.42	0.42
Total all operations		12.22	6.84

^{1/} Tractor and trailer.

Flax

Although flax is a minor crop in the area as a whole, it was grown on one-third of the large farms studied. Records were obtained on 15 farms growing flax.

The range in yield on these farms was from 1 to 9 bushels per acre. The average yield was 4 bushels per acre, while the 5-year average yield was reported to be 5 bushels. With the exception of some seed retained for planting, all of the crop is normally sold.

Rio was the principal variety grown. All planting seed was purchased on 60 percent of the farms. The usual rate of planting was from 25 to 30 pounds per acre.

The amounts of labor and power required per acre for the usual operations performed in producing flax are listed in Table 17. In seedbed preparation, operations were fairly uniform among farms. Moldboard plows and oneways were used for flatbreaking. Bedding, rather than flatbreaking, was practiced on 2 farms. Grain drills were used for the planting operation on a few farms, but the majority used a pick-up and an endgate seeder followed by a section harrow. Planting was usually done either in October or November, or in February.

A 6-foot pull-type combine was the common implement used to harvest flax, although a few farms used larger combines. A car and trailer were used for hauling to market. The average hauling distance was 4 miles. Harvesting was usually done the latter part of May or the first part of June.

A total of 3.6 hours of man labor and 3.1 hours of tractor work was required to produce an acre of flax.

Table 17. Labor and power required for the usual operations performed in producing flax

Operation	: Times : over	: Tractor-drawn equipment	
		: Hours per acre	
		: Man	: Tractor
Seedbed preparation:			
Flatbreak	: 1	: 1.33	: 1.33
Disk	: 2	: 1.00	: 1.00
Harrow	: 1	: 0.14	: 0.14
Planting	: 1	: 0.10	: 0.10
Harrowing	: 1	: 0.14	: 0.14
Total preharvest		: 2.71	: 2.71
Harvest:			
Combining	: 1	: 0.43	: 0.43
Hauling	: 1	: 0.43	: (0.43) <u>1/</u>
Total harvest		: 0.86	: 0.86
Total all operations		: 3.57	: 3.14

1/ Car and trailer.

Possibilities for Further Changes in Cotton Production Practices

Although 18 counties are included in the Coast Prairie area, unpublished data of the Bureau of Agricultural Economics indicate that 83 percent of the acreage of cotton was grown in only 7 counties. These counties are Austin, Calhoun, Fort Bend, Jackson, Matagorda, Wharton and Victoria. Two of these counties, Fort Bend and Wharton, grew nearly 50 percent of the acreage during the same period. Acreage of cotton in these counties has continued to increase since 1943.

As shown in Table 13, horse equipment was used on only 16 of the 150 cotton farms studied. All were small farms. The remainder of the farms were operated with tractor equipment, principally 2-row. Six of the large farms used 4-row equipment.

Even the larger farms have been slow to shift from 2-row tractor and equipment to 4-row. This is difficult to explain except for the fact that rainfall is heavy in the area and down drainage very poor. After a rain, the land can be worked sooner with a 2-row tractor and equipment than with a 4-row because the former is not so heavy. Although it is doubtful that 4-row tractors will be in general use in the area in the near future, adequate drainage will help some farmers make the shift from 2-row to 4-row equipment.

Although the use of 2-row tractor equipment showed an average saving of 11 hours of man labor per acre of cotton as compared with the use of 1-row horse equipment, the real advantage lies in the area of land that one man can operate. On the average, an operator can plant 19 acres and cultivate 21 acres in a 10-hour day with 2-row tractor equipment. In comparison, a 1-row horse-drawn planter and cultivator will each cover only 6 acres in a 10-hour day. As planting and cultivating are the critical operations in the production of cotton with respect to timeliness, one operator can handle a much larger acreage with 2-row tractor equipment.

Before World War II, it was difficult for many small farmers to make the shift from horse to tractor operation. Increased incomes during the war and post-war years provided a means for many to make this shift. Such a shift will probably continue, but on some farms acreage and income will retard the change. Some farmers are now in the transition stage between the use of horse equipment and 2-row tractor equipment. They are using 1-row tractor equipment which does not speed up operation or lower labor requirements to any great extent.

Two operations, hand hoeing and hand harvesting, made up nearly 90 percent of usual labor requirements per acre of cotton on farms using 2-row tractor equipment, Table 14.

The development of an efficient mechanical harvester, along with a successful defoliant for cotton, offers the greatest opportunity for reducing labor requirements. The only mechanical picker in commercial production at present is a one-row machine. Several of these machines were tried in the area in 1948 and some will be tried again in 1949. Farmer estimates indicate that the present one-row machine will pick about 5 to 8 acres in 10 hours. This rate is too slow, and the initial cost of \$8,300, including tractor, is very high considering the average yield in the area of slightly more than 200 pounds of lint per acre.

To properly visualize possible future cotton production practices, it is necessary to make certain assumptions. Planting cotton to a stand would eliminate the thinning operations. Although not in general use in this area, rotary hoes have reduced hand hoeing in some sections of the Cotton Belt. Flame cultivators have also been used successfully when mounted on the tractor and used simultaneously with regular cultivators. Assuming that cotton is planted to a stand, that one additional cultivation is needed with rotary hoe attachment and that flaming is practiced along with regular cultivation, the labor requirements previous to harvest could be reduced from about 15 hours per acre as in 1947 to about 5.5 hours.

Making a further assumption that a 2-row machine picker will be developed which will pick 12 acres in 10 hours and that an extra man is required to haul the cotton, then the harvesting labor requirements would be 3.5 hours per acre as compared with nearly 33 hours in 1947. It is assumed that the cotton would be picked over twice by machine.

Under these assumptions of complete mechanization, total labor requirements per acre of cotton would be 9 hours as compared with 48 hours in 1947. A saving of 39 hours of labor per acre of cotton would not necessarily mean that the crop could be produced more profitably. Relative costs of labor and machinery together with the effect of mechanical harvesting on the quality of cotton would be the determining factors. The cotton grower would still be faced with the necessity of deciding how much machinery to substitute for labor.

Although these assumptions include equipment and practices which are far from realization, it is not too early for farmers and farm leaders to think about the possibilities for changes in cotton production practices and to make plans to meet these changes.

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