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November 19, 1971

To the Graduate Council:

I am submitting herewith a thesis written by Fletcher M. Patterson entitled "Management Practices of Selected Cotton Producers in Limestone County, Alabama." I recommend that it be accepted for nine quarter hours of credit in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agricultural Extension.

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MANAGEMENT PRACTICES OF SELECTED COTTON PRODUCERS
IN LIMESTONE COUNTY, ALABAMA

A Thesis
Presented to
the Graduate Council of
The University of Tennessee

In Partial Fulfillment
of the Requirements for the Degree
Master of Science

by
Fletcher M. Patterson
December 1971

ACKNOWLEDGMENTS

The author expresses appreciation to the Limestone County cotton producers whose splendid cooperation made this study possible.

Gratitude is expressed to Dr. Robert S. Dotson, Chairman of the Graduate Committee, for his counseling and guidance in the design and writing of this thesis. Appreciation also is extended to other members of the Graduate Committee, Drs. Luther Keller, Donald Howard and C. E. Carter, Jr. Their suggestions and patient help were sincerely appreciated.

The author wishes to express his appreciation to Mr. Ralph Jones, Director of Auburn University Extension Service; Dr. Fred Robertson, former Director of Auburn University Extension Service; and to Mr. George D. H. McMillan, District Extension Chairman, Extension Service, Auburn University, for granting in-service training leave for the purpose of doing graduate study.

The author is most grateful to his wife, Wilma, for her patience, encouragement and assistance, and to his sons who were most understanding during the preparation of this study.

ABSTRACT

Sixty randomly selected cotton producers in Limestone County were interviewed in 1971 for the purposes of (1) characterizing those in different cotton yield groups, (2) determining which practices were being used by those in different yield groups, and (3) identifying some of the factors influencing the farmers to use or not to use the 12 practices studied. Cotton producers represented four yield categories based on pounds of lint cotton produced per acre in 1969-1970 and main comparisons were made between highest and lowest groups.

Findings disclosed that the 60 cotton producers in the county in 1970 had the following characteristics: (1) had an average farm size of 637 acres, and (2) had an average of 429 acres of cropland. Most cotton producers were full-time farmers with cotton as their major source of income.

When highest and lowest yield groups were compared, it was noted that the latter had (1) a higher average educational level (11.1 vs 10.4 grades), (2) a smaller average size of farm (406 vs. 1,025 acres), (3) fewer average acres of cropland (260 vs. 675 acres), (4) a smaller cotton allotment (70.0 vs. 241.6 acres), (5) planted fewer acres of cotton (69.3 vs. 241.6), and (6) harvested less average acres of cotton mechanically (69.3 vs. 241.6 acres).

With regard to adoption of 12 recommended cotton production practices studied, farmers in the highest yield group had the highest total average practice diffusion rating. There also appeared to be a

positive relation between yield and management levels since higher production groups tended to have higher total average practice diffusion ratings than lower yield groups.

Some other factors reportedly influencing cotton practice adoption included, in order of importance: (1) income received per acre; (2) adequacy of machinery and equipment; (3) amount of technical knowledge of the operator; (4) relative cost of the practices and benefits received; and (5) seriousness of land preparation, planting and harvesting problems peculiar to cotton.

With regard to individual sources of cotton production and marketing advice reported by crop producers, they included neighbors or friends, Extension workers, seed, fertilizer or pesticide dealers and cotton ginners, in that order. Additional mass media sources of information most frequently mentioned were daily newspaper, farm magazines, news letters, television and radio.

Suggestions were made for use of the findings and for further research.

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CHAPTER I

INTRODUCTION

I. THE PROBLEM AND NEED FOR THE STUDY

Limestone County, located in North Alabama, bordered by the Tennessee River on the south, Lauderdale on the west, Giles on the north, and Madison on the east, depends principally on cotton for its agricultural income. Cotton annually accounts for 45 percent of the county gross sales from agricultural products. According to Limestone County Agricultural Stabilization and Conservation Service (A.S.C.S.) office records for 1970, there were 1,743 farms on which there were 40,029 acres of cotton harvested. The 1970 gross sales totaled about \$9,855,000 (1:14).*

Based on data collected from the Alabama Crop Reporting Service, the average per acre lint production for county producers in 1970 was 617 pounds. By comparison, the previous four-year (1966-1969) average was 362 pounds, while the average for Alabama during that period was 360 pounds of lint per acre. Alabama Crop Reporting Service data for Limestone County revealed that yields ranged from an annual 10 to 1,760 pounds of lint per acre during the four-year period.

*Numbers in parentheses refer to numbered references in the Bibliography. Numbers after the colons refer to page numbers.

It should be pointed out that during the four-year period (1966-1969) there was almost a total crop failure (90 pounds per acre average) in 1967. This was an unusual situation.

By following recommended cotton production practices, it had been estimated that Limestone County farmers could increase average cotton yields of 100 pounds of lint per acre (above 1970 average), which could provide an additional gross income of \$1,200,000 at present market prices (1:14).

Although the Limestone County average was above that of the state at the time of the study, it was noted that many county cotton producers were below the state average. Some growers consistently produced high lint yields per acre while others consistently produced low yields. Previous studies had shown that the use of research varified recommended production practices with tobacco was positively associated with yield and net return per acre (3:71; 6:92; 9:71; 13:73).

Prior to the present study, observations in Limestone County indicated that cotton producers were not using some of the recommended production practices. For example, among the problems noted (4:5) were (1) limited control of seedling diseases (4:14); (2) failure to fertilize based on soil test recommendations; (3) lack of use of pre- or post-emergent herbicide; and (4) failure to practice early insect control (4:13, 15). Additional information is needed by the Limestone County Extension staff to plan for a more effective education program involving cotton producers.

II. PURPOSES

The purposes of this study were (1) to determine the characteristics of Limestone County cotton producers and their farms in two above average and two below average cotton yield categories, (2) to compare the use of the recommended cotton production practices between the yield groups, and (3) to identify some of the important factors influencing the cotton producers to adopt or not adopt recommended practices.

CHAPTER II

REVIEW OF LITERATURE

Limited information was available on adoption of recommended cultural practices by cotton producers.

In a 1965 study, Gordon, et al. (5:2,3) surveyed 126 cotton producers in Tipton County, Tennessee, to secure data in regard to cotton production practices. He found that 26 percent used soil test recommendations as a guide to fertilization. Thirty-two percent of the cotton acres had been limed within the last three years. The average pounds of fertilizer used included 98 pounds of nitrogen, 60 pounds of phosphate and 63 pounds of potassium. Other findings showed that 52.4 percent both owned and rented farms, 26.2 percent owned their farms and 21.4 percent rented the farms on which cotton was grown.

In the Tipton County, Tennessee study, 84 percent of the land was planted to a recommended variety. With regard to the source of cottonseed planted, 68 growers had used certified seed, 15 had used foundation seed, 10 had used registered seed and 56 had planted seed saved from the previous year's crop. Ninety-two percent of the seed planted was machine-delinted cottonseed; also, a small 17 percent used chemicals to control seedling diseases.

Eighty-one percent planted between April 20 and May 10; 10 percent planted after May 10; and 9 percent planted earlier, before April 20. One hundred eighteen reported hill-dropping seed, 38 drilling and 30 doing both. The planting rates of seed per acre

averaged 29 pounds for acid-delinted seed; 26.8 pounds for machine-delinted seed; 15 pounds for flame-delinted; and, for fuzzy (undelinted) seed, 33 pounds (5:4).

Eighty-three percent of the Tipton County farmers reported the use of pre-emergent herbicides for weed control and 24.6 percent used post-emergent herbicides. With regard to chopping, 54.8 percent chopped twice, 22.9 percent chopped once, 17.5 percent chopped more than two times, and 5 percent did not chop their cotton at all.

Insect control was used to varying degrees by the cotton producers interviewed. Twelve percent used a systemic insecticide for early season insect control, 20 percent sprayed for regular insect control, and 10 percent used a spray program throughout the fruiting season. A small 5 percent used an insect control program all the way through boll maturity.

The study further showed that 9.6 percent of the cotton acreage planted was defoliated by a like percent of the cotton farmers.

Sixty-nine percent of the producers owned cotton pickers, 44.4 percent one-row, and 24.6 percent two-row. Seventy-seven percent of the cotton producers harvested mechanically. A small 21.4 percent of the producers harvested dry cotton.

Silverman and Bailey (11:3) in a study of adoption of agricultural practices in Alcorn County, Mississippi, found that the adoption of recommended farm practices increased only 9 percent over a three-year period (1954-1957). The study also showed that the adoption of recommended practices occurred to the extent which farmers could combine practices into a workable unit. The failure to combine all

practices may be well illustrated by the hybrid corn practice; one practice without the other needed practices was shown to have a negative effect on yields.

Young and Marsh (14:28) in a study in Mississippi in 1964, found that size of farm operation was related to the level of recommended practice adoption. Lionberger (8:48) states that a large-scale operation and available resources are essential to combine the many new technological developments for successful adoption. These factors make it impossible for small operators to economically adopt certain practices. Lionberger (8:14) found that younger farmers were more willing to adopt new farm practices than elderly farmers. Kaufman and Bryant (7:1) found the adoption rate was highest among the younger farmers and the lowest rate was noted in elder farmers. They also found the farmers with the highest rate of adoption were, on the average, ten years younger than the farmers with the lowest rate of adoption.

Young and Marsh (14:28) found that those with the highest level of education had the highest level of adoption of new farm practices. They also found there was a shorter time period in the adoption of new farm practices by those with the highest level of education than was for those with the lowest of education. Kaufman and Bryant (7:1), in a Mississippi study of Practice Adoption, found that 61 percent of the farmers with the highest rate of adoption had completed more than nine years of school, while only 4 percent of the lowest adoption group had that much schooling.

Lionberger (8:43) found that higher income nearly always is associated with the high adoption of farm practices. Kaufman and Bryant (7:1) found that the median gross farm income was two and one-half times as large for the highest adoption group as for the lowest.

Young and Marsh (14:28) reported that the number of sources used, or contacts with information sources, was positively related to the rate of adopting new practices. The information sources most frequently reported were: friends, neighbors, relatives, agricultural agent, and the radio. In addition, more of the farmers who had talked with representatives of agricultural agencies had adopted recommended practices than had those who had not had such contacts.

Lionberger (8:38) found that a person's standing in the community (community prestige) in most every case was positively related to the adoption of new farm practices, especially where alertness to new developments in farming and early successful acceptance were status factors. Farmers with high social standing, under such circumstances, were expected to constantly remain well informed regarding new developments in farming.

In studying personal social factors associated with the adoption of recommended farm practices among cattlemen in Kansas, Copp (2:27) reported that acceptance of practices was dependent on an appeal to attitudes, values and perceptions and that practices were not adopted solely on a logical or economic basis.

In a 1966 study, Peal (11:93,99) surveyed 81 cotton producers in Lauderdale County, Tennessee, to secure data regarding their

characteristics. He reported the average educational level of those in the highest yield group was 8.4 years compared to 9.5 years for those in the lowest yield group.

Seventy-five percent of the farmers interviewed were 45 years of age or over. The average was 51.5 with both the highest and lowest yield groups being slightly younger. Seventy-five percent of the producers surveyed were full-time farmers and 15 percent were part-time farmers; while 67 percent of the producers depended upon cotton as their major source of income. Cotton was grown by the owner on 51 percent of all farmers surveyed, worked on shares on 44 percent, and cash rented on the remaining 5 percent. Seventy-three percent of the producers interviewed reported using mechanical pickers. One Hundred percent of the cotton was harvested mechanically by 33 percent of the producers, by 37 percent of those in the highest yield group and by 33 percent of those in the lowest yield group.

In the Lauderdale County, Tennessee, it was further concluded that fertilizer used by the highest yield group was 450.3 total pounds of fertilizer per acre and the lowest yield group 391.4 pounds. Farmers in the highest yield group had a higher average practice diffusion rating, 4.12, than recorded for the lowest yield group, 3.97. Sixty-eight percent of the cotton producers interviewed, on the average, were in the "using" state with regard to each of the 12 recommended cotton production practices. Of those in the highest yield group, 71 percent, on the average, were "using" each practice, while 64 percent of those in the lowest yield group were doing so.

Forty-one percent of the farmers interviewed reported following soil test recommendations in the cotton fertilization, a larger percent, 47, of the highest yield group than of the lowest yield group (39 percent) were using the practice.

Systemic insecticides for early insect control were used by 21 percent of the Lauderdale County producers. More of the highest yield group, about one-third, than of the lowest, about one-fifth, used such chemicals.

CHAPTER III

METHODS AND PROCEDURES

Records of the Limestone County Agricultural Stabilization and Conservation Service (A.S.C.S.) Office were used to determine farms producing cotton for 1969-70. The names of 25 producers with allotments of less than one acre were eliminated from the original list of 1,743.

Thus a total cotton yields for 1969 (the last year with complete yield data) was obtained, and growers were divided into four yield groups for study purposes. The groups will hereafter be referred to in the following terms: (1) Considerably below average (meaning those producing 400-499 pounds of lint per acre), 540 producers; (2) Below average (meaning those producing 505-616 pounds of lint per acre), 453 producers; (3) Above average (meaning those producing 618-699 pounds of lint per acre, 418 producers; and (4) Considerably above average (meaning those producing 700-1,760 pounds of lint per acre) 332 producers. Stratified random samples of 15 producers were drawn from each of the four yield category populations.

A list of important factors affecting cotton yields was then made with the assistance of an Auburn University cotton specialist. Important research-verified factors were included in the interview schedule prepared for use in the study (see Appendix).

All farmers selected in the sample were visited and interviewed between June 1, 1971, and September 15, 1971. Data were obtained in each case from the farm owner or operator. All farmers were asked

the same questions by the same interviewer. All questions were related to the 1969-1970 cotton crops.

Most of the results are shown in percents reporting. Averages were computed where applicable. Practice diffusing ratings and averages were computed for individual and production groups using the following scale: (1) 0.0 equals "unaware" of the practice; (2) 1.0 equals "aware" of the practice; (3) 2.0 equals "interested" in the practice; (4) 3.0 equals "planning to try" the practice; (5) 4.0 equals "tried" the practice, but not using it at the time of the study; and (6) 5.0 equals "using" the practice as recommended. Major comparisons were between "considerably below average" and "considerably above average" groups in order to consider extremes.

CHAPTER IV

FINDINGS OF THE STUDY

The findings of the study are presented in tables and briefly discussed in the pages that follow. It should be remembered that a stratified random sample of a total of 60 cotton producers was selected from the total population of 1,743 producers.

I. CHARACTERISTICS OF THE COTTON PRODUCERS AND THEIR FARMS

Attitude Toward the Survey

All producers selected for this study were found to have friendly attitudes toward the survey. Most asked how their production practices compared with the average.

Degree to Which Interviewer Knew Cotton Producers

Following the interview, it was discovered that the interviewer was acquainted with 92 percent of the cotton producers, knowing them "very well" or "fairly well" as shown in Table I. Larger percents of those in the considerably above average (53 percent) and above average (60 percent) categories than in the below average (33 percent) and considerably below average (33 percent) categories were "very well" known.

Only 8 percent of all farmers were not very well known by the interviewer. All the producers in the considerably above average and above average were either very well or fairly well known. Eighty-six percent of the below average and 80 percent of the considerably below

TABLE I

DEGREE TO WHICH INTERVIEWER KNEW RESPONDENTS BY PERCENTS ACCORDING TO 1969 COTTON YIELDS
PRODUCED BY 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Degree to Which Interviewer Knew Respondent	Yield Group (Pounds lint per acre)					
	Total (N=60)* Percent	Above		Below		Considerably Below Average 400-499 (N=15) Percent
		Above Average 700-1760 (N=15) Percent	Above Average 618-699 (N=15) Percent	Above Average 505-616 (N=15) Percent	Below Average 400-499 (N=15) Percent	
Very well	45	53	60	33	33	33
Fairly well	47	47	40	53	47	47
Not very well	8	-	-	14	20	20
Total	100	100	100	100	100	100

*Percents are rounded to the nearest whole number.

average were "very well" or "fairly well" known. Those not "very well" known consisted of 14 percent of the below average and 20 percent of the "considerably below average" groups.

Educational Levels

Data in Table II, relating to the educational level of cotton producers, show that 12 percent of those interviewed had less than a ninth grade education. Seventy-six percent had completed training between the ninth and twelfth grade levels. Twelve percent of the producers had completed one or more years of college. The average grade level attained by those in the considerably above average group was 10.4 while those in the considerably below average group had a grade level average of 11.1 years. This finding, though unclear, is similar to one found by Peal (10:15) in a study of cotton grown in Lauderdale County, Tennessee.

Age

Reference to Table III discloses that only 27 percent of the 60 farmers interviewed in this study were below 45 years of age. Sixty-five percent were 45 to 64 years of age; 8 percent were 65 years or older. The largest group (65 percent) were in the 45 to 65 year interval. The average age for all farmers was 50.1 years. No trend was seen indicating a relation between yield and age.

Portion of Farm Land in 1970 Cotton Allotment

Data in Table IV show that 55 percent of the cotton producers interviewed had between 20 and 40 percent of their crop land in the

TABLE II

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO EDUCATIONAL LEVELS ATTAINED BY
60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Educational Level	Total (N=60) Percent*	Yield Group (Pounds lint per acre)					
		Considerably Above Average	Above Average	Below Average		Considerably Below Average	
		700-1760 (N=15) Percent	618-699 (N=15) Percent	505-616 (N=15) Percent	400-499 (N=15) Percent		
Grades 1 - 8	12	7	13	20	7		
Grades 9 - 12	76	73	74	73	86		
College (1 - 4 years)	12	20	13	7	7		
Total	100	100	100	100	100		
Average Educational Level	10.8	10.4	11.3	10.3	11.1		

*Percents are rounded to the nearest whole number.

TABLE III

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO AGES OF 60 FARMERS
IN LIMESTONE COUNTY, ALABAMA

Age of Respondent	Total (N=60) Percent*	Yield Group (Pounds lint per acre)					
		Considerably Above Average 700-1760 (N=15) Percent	Above Average 618-699 (N=15) Percent	Below Average 505-616 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent		
25-44	27	13	40	27	27		27
45-64	65	87	53	66	53		53
65 and over	8	-	7	7	20		20
Total	100	100	100	100	100		100
Average Age	50.1	49.1	49.0	53.0	53.0		53.0

* Percents are rounded to the nearest whole number.

TABLE IV

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO PORTIONS OF FARM LAND IN COTTON
ALLOTMENTS OF 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Portion of Farm Land In 1970 Cotton Allotment	Yield Group (Pounds lint per acre)					
	Considerably Above Average	Above Average	Below Average	Considerably Below Average		
	700-1760 (N=15) Percent	618-699 (N=15) Percent	505-616 (N=15) Percent	400-499 (N=15) Percent		
Total (N=60) Percent*	37	33	13	33	67	
1-19%						
20-39%	55	60	80	53	26	
40-59%	8	7	7	14	7	
Total	100	100	100	100	100	
Average Portions of Farm Land in Cotton	24.2	25.6	27.5	24.7	19.0	

*Percents are rounded to the nearest whole number.

1970 cotton allotment. Sixty percent of the considerably above average yield group had between 20 and 40 percent of their crop land in cotton while only 26 percent of the considerably below average yield group had these amounts. When comparing the considerably above average and considerably below average groups, data show that the highest had an average 24.2 percent of farm land in cotton as compared to the lowest with only 19 percent of farm land in cotton.

Planting of 1970 Allotments

Ninety percent of the farmers interviewed planted full 1970 cotton allotments, while the remaining 10 percent underplanted. Reference to Table V shows a slight positive relationship between yield and planting of the 1970 cotton allotment since 100 percent of the considerably above and 93 percent of the considerably below average groups planted full allotments.

Further reference to the table discloses that most of those underplanting (10 percent of the 60 farmers) did so to comply with government program or leased part of allotment to other cotton farmers. A comparison of the highest and lowest yield groups indicates that all (100 percent) of the highest yield group planted their full allotment, while (7 percent) the lowest yield group failed to plant full allotment because of lease agreements with other farmers.

It may be noted that division of some cotton land was not necessary in order to receive government support on domestic allotments (i.e., 65 percent of effective allotment) in 1970.

TABLE V

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO PERCENT OF 60 FARMERS IN
LIMESTONE COUNTY, ALABAMA, WHO PLANTED FULL ALLOTMENTS
AND REASONS FOR UNDERPLANTING

	Total (N=60) Percent*	Yield Group (Pounds lint per acre)					
		Considerably Above Average		Above Average		Below Average	
		700-1760 (N=15) Percent	Percent	618-699 (N=15) Percent	Percent	505-616 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent
Planted 1970 Allotment in Full							
Yes	90	100	93	73	93		
No	10	-	7 ⁽¹⁾	27 ⁽¹⁾	7 ⁽²⁾		
Total	100	100	100	100	100		

* Percents are rounded to the nearest whole number.

¹To comply with government programs.

²Leased to other farm operators.

Cotton Allotments

The data relating to cotton allotments are presented in Table VI. Twenty-nine percent of all farmers interviewed had between 1 to 49 acres cotton allotment. Twenty-five percent had allotments of 50 to 99 acres, 18 percent had between 100 to 199 acres, 23 percent had between 200 to 500 acres, and 5 percent had 500 acres or more. Data showed that the average acreage allotment of the considerably above average group was 241.6 acres compared to 70.0 acres for the considerably below average group. Thirteen percent in the considerably above average producer group had less than 50 acres allotment compared with 47 percent of those in the considerably below average yield group.

Size of Farm

Data in Table VII show that 53 percent of all farmers interviewed had farms smaller than 500 acres in size, 25 percent had from 500 to 1,000 acres and the remaining 21 percent reported from 1,000 to 4,500 acres. The average size of farm was 637 acres.

Forty percent of the highest yield group had farms smaller than 500 acres in size, while 74 percent of those in the lowest yield group had farms that small. Further, it is interesting to note that the average size of farms for the considerably above average group was 1,025 acres and was 406 acres for the lowest group. The average size of farm decreased with decreased yield levels. Therefore, there was a tendency for high yield to be associated with larger farms.

TABLE VI

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO SIZE OF COTTON ALLOTMENTS
OF 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Size of Cotton Allotment	Yield Group (Pounds lint per acre)					
	Considerably Above Average 700-1760 (N=15) Percent	Above Average 618-699 (N=15) Percent	Below Average 505-616 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent		
Total (N=60) Percent*						
1 - 49 Acres	29	13	20	33	47	
50 - 99 Acres	25	20	13	33	33	
100 - 199 Acres	18	27	27	7	13	
200 - 499 Acres	23	27	33	27	7	
500 or More Acres	5	13	7	0	0	
Total	100	100	100	100	100	
Average Size of Allotment	152.9 Acres	241.6 Acres	174.0 Acres	126.1 Acres	70.0 Acres	

*Percents are rounded to the nearest whole number.

TABLE VII

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO SIZE OF FARM
OF 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Size of Farm (Acres)	Yield Group (Pounds lint per acre)					
	Considerably Above Average 700-1760 (N=15) Percent	Above Average 618-699 (N=15) Percent	Below Average 505-616 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent		
Total (N=60) Percent*						
1 - 499	53	40	33	67	74	
500 - 999	25	20	40	13	26	
1000 - 4500	21	40	27	20	-	
Total	100	100	100	100	100	
Average Size	637 Acres	1,025 Acres	656 Acres	462 Acres	406 Acres	

*Percents are rounded to the nearest whole number.

Acres of Cropland

Forty-seven percent of the cotton producers had less than 300 acres of cropland (see Table VIII). The average cropland acreage was 429.

Thirty-three percent of the highest yield group had less than 300 acres of cropland, which is compared to 53 percent of those in the lowest yield group having the same acreage. When the average acres of cropland are compared, it may be seen that the considerably above average producers had an average of 675 acres, while the considerably below had 260 acres. Here again, acreage decreased with decreasing yield levels. This suggests the tendency for higher yields in cotton to be associated with larger cropland acreages.

Acres of Cotton Planted

Fifty-four percent of the cotton producers planted less than 100 acres, the average planted acres was 150.1 as shown in Table IX. Thirty-three percent of the considerably above average group planted less than 100 acres of cotton in 1970 compared to 80 percent of the considerably below average group. Data also show that 13 percent of the considerably above average producers planted 500 or more acres, while none of the considerably below average were in this category. Figures seem to point to a positive relation between acreage planted and yield.

Degree of Respondent's Interests in Improving Cotton Production and Marketing

Data processed in Table X show that 72 percent of the cotton producers were "very interested" in improving yields, while 28 percent

TABLE VIII

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO TOTAL ACRES OF CROPLAND
OF 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Acres of Cropland	Yield Group (Pounds lint per acre)					
	Considerably Above Average 700-1760 (N=15) Percent	Above Average 618-699 (N=15) Percent	Below Average 505-616 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent		
1 - 299	47	33	66	53		
300 - 499	20	13	7	40		
500 - 799	15	13	7	7		
800 - 999	10	7	20	-		
1000 - 1999	8	27	-	-		
Total	100	100	100	100		
Average Amount of Cropland	429 Acres	675 Acres	461 Acres	320 Acres	260 Acres	

*Percents are rounded to the nearest whole numbers.

TABLE IX

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO NUMBER OF ACRES OF COTTON
PLANTED BY 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Number Acres of Cotton Planted	Yield Group (Pounds lint per acre)					
	Considerably Above Average		Above Average		Below Average	
	700-1760 (N=15) Percent*	Percent	618-699 (N=15) Percent	Percent	505-616 (N=15) Percent	400-499 (N=15) Percent
1 - 99	54	33	33	66	80	
100 - 499	41	54	60	34	20	
500 or More	5	13	7	-	-	
Total	100	100	100	100	100	100
Average Number of Acres Planted	150.1	241.6	171.7	117.9	69.3	

*Percents are rounded to the nearest whole number.

TABLE X

RELATIONS OF 1969 COTTON YIELDS TO THE RESPONDENT'S INTEREST IN IMPROVING COTTON
PRODUCTION AND MARKETING OF 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Degree of Respondent's Interest	Yield Group (Pounds lint per acre)					
	Considerably Above Average		Above Average		Below Average	
	700-1760 (N=15) Percent	Percent	618-699 (N=15) Percent	Percent	505-616 (N=15) Percent	400-499 (N=15) Percent
Total (N=60) Percent*	72	93	100	73	20	80
Very Interested						
Somewhat Interested						
Total	100	100	100	100	100	100

*Percents are rounded to the nearest whole number.

were only "somewhat interested." Ninety-three percent of the considerably above average group were "very interested" in improving yields, while only 20 percent of the considerably below average were "very interested." Eighty percent of the considerably below average group were "somewhat interested" in improving yields, while only 7 percent of the considerably above average were "somewhat interested" in improving their cotton production and marketing practices.

Type of Seed Delinting Used

Untabled data showed that all of the cotton producers interviewed had used machine delinted and treated seed for planting.

Size of Planter Used

Twenty-seven percent of the 60 farmers interviewed used two-row planters, while 53 percent used four-row planters, and 20 percent used six-row planters.

Data in Table XI show that larger planter sizes (four and six) were used by those in the considerably above average yield group, 67 percent preferred four-row while 33 percent preferred six-row planters. The considerably below average yield group preferred two- and four-row planters, 47 percent and 53 percent, respectively, reporting.

When highest and lowest yield groups are compared, it is noted that the former tended to use larger planters than the latter.

Mechanical Harvesting

Untabled data disclosed that all cotton producers interviewed reportedly harvested their cotton mechanically.

TABLE XI

FREQUENCY OF SIZE OF PLANTER USED IN VARIOUS COTTON YIELD GROUPS
BY 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Size of Planter Used	Yield Group (Pounds lint per acre)					
	Considerably Above Average	Above Average	Below Average	Considerably Below Average		
	700-1760 (N=15) Percent	618-699 (N=15) Percent	505-616 (N=15) Percent	400-499 (N=15) Percent		
Total (N=60) *	27	27	33	47		
Two-row	-	27	33	47		
Four-row	53	46	47	53		
Six-row	20	27	20	-		
Total	100	100	100	100		

* Percents are rounded to the nearest whole number.

Reference to data presented in Table XII shows that 65 percent of the cotton producers owned mechanical pickers of which 10 percent were one-row and 55 percent were two-row. Thirty-five percent had their cotton custom picked. Eighty-seven percent of the considerably above average group owned pickers compared to only 47 percent for the considerably below average group.

Therefore, there seemed to be slight positive association between higher yields and owning a mechanical picker.

Turn-row Space

Table XIII discloses that 82 percent of the cotton growers left 20 to 40 feet of turn-row space. There were no differences between extreme yield groups when turn-row spacings were compared.

Texture of Soil

Table XIV shows that 90 percent of all farmers interviewed reportedly produced cotton on clay soil, 8 percent on loamy soil, and 2 percent on loamy and clay soil. Data revealed little differences between the percents of above and below average producers on the soils.

Average Practice Diffusion Scores and Total Average Ratings

The average individual cotton practice diffusion and total average ratings for farmers interviewed on 12 recommended practices are shown in Table XV. Seven percent of the cotton producers had "tried the practices, but were not using them" (3.50 to 4.49) at the time of the interview. Ninety-three percent had average practice diffusion ratings between 4.50 to 5.00, meaning that they were, in

TABLE XII

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO PERCENT OF FARMERS OWNING MECHANICAL PICKERS AND SIZE OF MECHANICAL PICKERS OWNED BY 60 FARMERS INTERVIEWED IN LIMESTONE COUNTY, ALABAMA

Size of Mechanical Picker Owned	Yield Group (Pounds lint per acre)					
	Considerably Above Average		Above Average		Below Average	
	700-1760 (N=15)	Percent	618-699 (N=15)	Percent	505-616 (N=15)	Considerably Below Average 400-499 (N=15)
Total (N=60)	35	13	27	47	53	
Percent*	10	7	13	13	7	
None	55	80	60	40	40	
One-row	100	100	100	100	100	
Two-row						
Total						

* Percents are rounded to the nearest whole number.

TABLE XIII

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO AMOUNTS OF TURN-ROW SPACE
ALLOWED BY 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Number of Feet In Turn-Row Space	Yield Group (Pounds lint per acre)					
	Considerably Above Average	Above Average	Below Average	Considerably Below Average		
	700-1760 (N=15) Percent	618-699 (N=15) Percent	505-616 (N=15) Percent	400-499 (N=15) Percent		
Total (N=60) Percent*						
8 - 12 Feet	5	7	7	-		
14 - 16 Feet	13	-	13	33	7	
20 - 40 Feet	82	93	80	60	93	
Total	100	100	100	100	100	

*Percents are rounded to the nearest whole number.

TABLE XIV

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO TEXTURE OF COTTON LAND
OF 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Texture of Cotton Land	Yield Group (Pounds lint per acre)						
	Total (N=60) Percent*	Considerably Above Average		Above Average		Considerably Below Average	
		700-1760 (N=15) Percent	Percent	618-699 (N=15) Percent	Percent	505-616 (N=15) Percent	400-499 (N=15) Percent
Clay Soil	90	86		93	93	87	
Loamy Soil	8	7		7	7	13	
Loamy and Clay Soil	2	7		-	-	-	
Total	100	100		100	100	100	

*Percents are rounded to the nearest whole number.

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO AVERAGE COTTON PRACTICE
DIFFUSION RATINGS AND TOTAL AVERAGE RATINGS*

* In the rating system used: (1) 4.50 - 5.00 means "using" the 12 practices studied; (2) 3.50 - 4.49 means "tried the practices but not now using," and (3) 0.00 - 3.49 means "had not tried" the practices.

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the main, "using" the practices. The total average practice diffusion rating for all producers interviewed was 4.89.

Considerably above average producers had the highest total average practice diffusion rating (5.00), and the considerably below average group had the lowest (4.73); though the spread was not great. This suggests that the highest group on the average used more of the 12 practices than was true of the lowest.

Average Cotton Practice Diffusion Ratings and Total Average Ratings

Table XVI shows the average practice diffusion ratings of those in the various yield groups for each and all of the 12 recommended cotton production practices. Again, it may be noted that there appears to be a slight but direct positive relation between yield and total average practice diffusion ratings since considerably above average producers had a 5.00 total average rating and the considerably below average had 4.73--middle groups falling in between.

Practices (1, 2, 3 and 4) related to planting. Producers in both the highest and lowest groups averaged in the "using" stage with regard to planting practices, excepting the latter on one practice, as follows: (1) Practice 1--planted recommended varieties (5.00, "using" for both); (2) Practice 2--planted between April 10 and April 25 (5.00, "using" and 2.67 "planning to try"); (3) Practice 3--used recommended seeding rates and procedures (5.00 for both), and (4) Practice 4--fertilized cotton based on soil test (5.00 for both).

Practices 5, 6, 7, 8 and 9) related to pest control. Practices concerning insect and disease control for the highest and lowest yield

TABLE XVI

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO AVERAGE COTTON PRACTICE
DIFFUSION RATINGS AND TOTAL AVERAGE RATINGS*

	Yield Group (Pounds lint per acre)					
	Considerably Above Average 700-1760 (N=15) Rating	Above Average 618-699 (N=15) Rating	Below Average 505-616 (N=15) Rating	Considerably Below Average 400-499 (N=15) Rating		
Cotton Production Practice	Total (N=60) Rating					
Planting:						
Planted a cotton variety or varieties recommended last year (as in EC p-42 or Per- formance Trials--that year)?	5.00	5.00	5.00	5.00		
Planted between April 10 - 25 last year?	4.42	5.00	5.00	2.67		
Used recommended seeding rate and procedure for the kind of seed used?	5.00	5.00	5.00	5.00		
Fertilized cotton land according to soil test recommendations (lime, fertilizer and boron	5.00	5.00	5.00	5.00		
Pest Control:						
Used recommended material to help control seedling diseases (Terrachlor Super X) 10%-10-12 #/A or Demosan 10% - 10#A	4.84	5.00	4.67	5.00	4.67	

TABLE XVI (continued)

	Yield Group (Pounds lint per acre)					
	Considerably Above		Above Average		Below Average	
	Average 700-1760 (N=15) Rating	Rating	Average 618-699 (N=15) Rating	Rating	Average 505-616 (N=15) Rating	Considerably Below Average 400-499 (N=15) Rating
Cotton Production Practice	Total (N=60) Rating					
Used recommended procedure to help control seedling disease (hopper box or furrow)?	4.55	5.00	4.67	4.13	4.40	
Effectively controlled weeds last year by using recommended procedures (see EC P-41B)	5.00	5.00	5.00	5.00	5.00	
Made decisions concerning use of insecticides based on actual field counts (see Ext. Cir. E-11)	4.92	5.00	5.00	4.67	5.00	
Other Procedures:						
Harvested only dry (roughly 8-10% moisture) cotton free from dew and/or rain	5.00	5.00	5.00	5.00	5.00	
Had cotton classified by the USDA Classing Office	5.00	5.00	5.00	5.00	5.00	
Getting the advice of professionals in the area of cotton production and marketing?	5.00	5.00	5.00	5.00	5.00	
Total Average Rating	4.89	5.00	4.95	4.88	4.73	

* In the rating scale used: 0 = unaware; 1 = aware of the practice; 2 = interested in the practice; 3 = planning to try the practice; 4 = tried the practice, but not now using it; and 5 = using the practice.

groups averaged in the "using" stage (5.00 and 4.67, respectively) for Practices 5 and 6--"used recommended material and procedures to help control seedling diseases." Both extreme groups were "using" Practice 7--"Effectively controlled weeds." Practice 8--"Effectively controlled insects"--found highest and lowest groups in "using" (5.00) and "tried" (4.40) stages, respectively. Practice 9--"Use of insecticides--based on actual field count" shows both extreme groups in the "using" stage.

Other Practices (10, 11 and 12). Producers in the highest and lowest yield groups averaged in the "using" stage (5.00 each) with regard to Practice 10--"Harvested only dry cotton," Practice 11--"Had cotton classified," and Practice 12--"Getting the advice of professionals in production and marketing."

Major Occupation

Eighty-five percent of the cotton producers were full-time farmers. Reference to Table XVII shows that 8 percent were part-time farmers. Three percent were "wage earners" and 2 percent each were "in business" or "retired" farmers. It is interesting that 100 percent of the considerably above average farmers were full-time; while only 66 percent of the considerably below average were full time. Apparently, those depending on farming more completely for livelihood produced higher yields.

Sex of Operators

Untabled data show that 100 percent of the farms were operated by men. In a similar Tennessee county study reported by Peal (10:20), 4 percent of the cotton producers were women.

TABLE XVII

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO THE MAJOR OCCUPATION
OF 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Major Occupation	Total (N=60)* Percent	Yield Group (Pounds lint per acre)			
		Considerably Above Average 700-1760 (N=15) Percent	Above Average 618-699 (N=15) Percent	Below Average 505-616 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent
Full-time Farmer	85	100	86	86	66
Part-time Farmer	8	-	7	7	20
Wage Earner	3	-	7	-	7
Business	2	-	-	-	7
Retired	2	-	-	7	-
Total	100	100	100	100	100

*Percents are rounded to the nearest whole number.

Practice Adoption Level

Study of data in Table XVIII shows that the highest percent (32 percent) of all the cotton farmers interviewed had an adoption level of "soon after the first few." Thirty percent were classified as "among the first few." Twenty percent of the farmers were classified as "a little later than most" in practice adoption, 18 percent being classed as "sooner than the average."

Comparison of the extreme groups indicates that while 100 percent of the considerably above average and above average cotton growers were "soon after the first few," or above, only 33 percent of the below average and 14 percent of the considerably below average were so classified. The percent rated "among the first few" decreased as yield level decreased. Two-thirds of the considerably below average group and none of the above average group were classified as "a little later than most" in adoption of practices.

Major Source of Income

Data presented in Table XIX disclose that 67 percent depended upon cotton as their major source of income. Twelve percent depended on soybeans and other field crops. Eleven percent had nonfarm major sources of income. Five percent of the farmers derived most of their income from either beef cattle or swine. An additional 5 percent depended upon dairying for a major portion of their income.

The below average producers tended to depend less upon cotton as their major income source than the above average producers. In the considerably above and considerably below average group there

TABLE XVIII

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO INTERVIEWER'S JUDGMENT
OF 60 LIMESTONE COUNTY FARMERS PRACTICE ADOPTION LEVELS

Practice Adoption Level	Yield Group (Pounds lint per acre)					
	Considerably Above Average		Above Average		Below Average	
	700-1760 (N=15) Percent	Percent	618-699 (N=15) Percent	Percent	505-616 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent
Total (N=60)*	30	60	40	60	13	7
Among the First Few	30	60	40	60	13	7
Soon After the First Few	32	40	60	60	20	7
Sooner than the Average	18	-	-	-	54	20
A Little Later than Most	20	-	-	-	13	66
Among Last Few	-	-	-	-	-	-
Total	100	100	100	100	100	100

*Percents are rounded to the nearest whole number.

TABLE XIX

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO MAJOR SOURCES OF INCOME
OF 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Major Source of Income	Yield Group (Pounds lint per acre)					
	Considerably Above Average 700-1760 (N=15) Percent	Above Average 618-699 (N=15) Percent	Below Average 505-616 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent		
	Total (N=60) *					
Cotton	67	87	80	73		27
Soybeans and Field Crops	12	13	7	-		27
Non-farm	11	-	13	7		27
Beef Cattle and Swine	5	-	-	13		7
Dairying	5	-	-	7		12
Total	100	100	100	100		100

*Percents are rounded to the nearest whole number.

appeared to be a small trend toward soybean production as a major source of income. Twenty-seven percent of the considerably below average growers and none of the considerably above average mentioned non-farm as a major source. The percentage depending primarily on cotton as a major source of income dropped from 87 percent in the considerably above average group to 27 percent in the considerably below average group. Farmers found in the considerably above average group were professional row crop farmers, 87 percent depended on cotton, while 13 percent depended on soybean and field crops.

Tenure Status

Fifty-three percent of the farmers who grew cotton owned the allotment, 27 percent owned and rented, and 20 percent rented their allotments, as shown in Table XX. When comparing the highest and lowest yield group, it is noted that there is very little difference in tenure status. Twenty-seven percent of the lowest yield group rented, while 13 percent of the highest yield group did so.

Most Recent Year Cotton Land Tested

Data in Table XXI show that 100 percent of the 60 cotton producers interviewed in this study had their soil tested since 1965. Of these, 98 percent had taken tests not more than three years prior to the 1970 crop--indicating that tests were taken no earlier than January, 1968. The remaining 2 percent had tested soil between 1965 and 1968. However, 7 percent of those in the highest yield category were still following recommendations based on soil tests made in 1965. When comparing the yield groups, it is noted that all

TABLE XX

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO TENURE STATUS OF
COTTON ACREAGE OF 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Tenure Status of Cotton Enterprise	Yield Group (Pounds lint per acre)					
	Considerably Above Average		Above Average		Below Average	
	700-1760 (N=15) Percent	Percent	618-699 (N=15) Percent	Percent	505-616 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent
Total (N=60) Percent*						
Owner	53	60	40	60	53	
Owner and Renter	27	27	40	27	20	
Renter	20	13	20	13	27	
Total	100	100	100	100	100	

*Percents are rounded to the nearest whole number.

TABLE XXI

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO MOST RECENT YEAR COTTON LAND WAS
TESTED ON 60 FARMS IN LIMESTONE COUNTY, ALABAMA

Most Recent Year Soil was Tested	Total (N=60) Percent*	Yield Groups (Pounds lint per acre)					
		Considerably Above Average	Above Average	Below Average	Considerably Below Average		
		700-1760 (N=15) Percent	618-699 (N=15) Percent	505-616 (N=15) Percent	400-499 (N=15) Percent		
1965	2	7	-	-	-	-	
1968	5	7	-	13	-	-	
1969	58	66	100	53	13		
1970	35	20	-	34	87		
Total	100	100	100	100	100	100	

* Percents are rounded to the nearest whole number.

of the farmers in each of the yield groups had taken soil tests. When the highest and lowest production groups are compared, it is seen that a higher percent of the former (66 percent) than of the latter (13 percent) had taken soil tests prior to 1970. It is noted that the opposite was true in 1970 since 20 percent of the highest yield group tested soil compared with 87 percent of the lowest group. In comparing the yield groups, it is noted that the highest had been taking soil tests longer than the lowest.

Number of Weeks Before Planting that Seedbed was Prepared

Table XXII shows 56 percent of the cotton producers prepared 14 weeks before planting, 27 percent prepared seedbeds 16 weeks before, and 17 percent prepared them 4 to 6 weeks before planting. It was interesting to note that all of those in the highest production group prepared seedbeds 14 to 16 weeks in advance of planting. Eighty percent of those in the lowest production group prepared their seedbeds 14 to 16 weeks ahead of planting. The remaining 20 percent of the lowest production group prepared seedbeds only 4 to 6 weeks ahead of planting.

Pounds Fertilizer Used

Data presented in Table XXIII show that 80 percent of the cotton producers used 450 to 749 pounds of fertilizer per acre. The average per acre fertilization rate for all interviewees was 550 pounds. When comparing the yield groups, it is noted that 100 percent of the lowest yield group used 450 to 749 pounds of fertilizer per acre or an average of 545 pounds per acre. Sixty-seven percent

TABLE XXII

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO NUMBER OF WEEKS BEFORE PLANTING THAT
SEEDBED WAS PREPARED FOR 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Number of Weeks Seedbed was Prepared Before Planting	Yield Groups (Pounds lint per acre)					
	Considerably Above Average	Above Average	Below Average	Considerably Below Average		
	700-1760 (N=15) Percent	618-699 (N=15) Percent	505-616 (N=15) Percent	400-499 (N=15) Percent	Total (N=60) Percent*	
4 - 6 Weeks	17	20	26	20		
14 Weeks	56	47	67	67		
16 Weeks	27	53	7	13		
Total	100	100	100	100		

*Percents are rounded to the nearest whole number.

TABLE XXIII

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO TOTAL POUNDS OF FERTILIZER USED AND AVERAGE POUNDS
FERTILIZER USED BY 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Pounds of Fertilizer Used	Yield Group (Pounds lint per acre)					
	Considerably Above Average		Above Average		Below Average	
	Total (N=60) Percent*	700-1760 (N=15) Percent	618-699 (N=15) Percent	505-616 (N=15) Percent	400-499 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent
0 - 499	12	26	7	13	-	-
450 - 749	80	67	73	80	100	100
750 - 1300	8	7	20	7	-	-
Total	100	100	100	100	100	100
Total Average Pounds Per Acre	555 lbs.	583 lbs.	646 lbs.	448 lbs.	545 lbs.	

* Percents are rounded to the nearest whole number.

of those in the highest producing group used 450 to 749 pounds, 26 percent used 0 to 449 pounds, and 7 percent used 750 to 1,300 pounds of fertilizer per acre or an average of 583 pounds.

Pounds Nitrogen Per Acre

Study of Table XXIV reveals that an average of 86.3 pounds of nitrogen per acre was used by the cotton producers interviewed. When comparing the amount of nitrogen used per acre by the considerably above average (104.2 pounds) and considerably below average (81.6 pounds) groups, it is noted that the former did use an average of only 22.6 more pounds of nitrogen per acre. Eighty-seven percent of those in the highest yield group used 80 or more pounds of nitrogen per acre as contrasted to 40 percent using as much for the lowest yield group. This data indicate a slight trend toward higher yields may be associated with higher nitrogen fertilizer rates.

Pounds of Phosphate Per Acre

An average of 75 pounds of phosphate was used by the 60 cotton producers interviewed as shown in Table XXV. Only slight difference was noted when comparing the highest and lowest average groups. There was apparently not enough difference in phosphate application rates between yield groups to change yield values. The highest may have had higher phosphate levels to start with than the lowest.

Pounds Potash Per Acre

Data in Table XXVI show that an average of 75 pounds of potash was used by the cotton producers. Thirty-three percent of the producers in the highest yield group used 80 or more pounds of potash, while

TABLE XXIV

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO ACTUAL POUNDS OF NITROGEN AND AVERAGE POUNDS APPLIED
PER ACRE BY 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Pounds of Nitrogen Used Per Acre	Yield Group (Pounds lint per acre)					
	Considerably Above Average		Above Average		Below Average	
	Total (N=60) Percent*	700-1760 (N=15) Percent	618-699 (N=15) Percent	505-616 (N=15) Percent	400-499 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent
1 - 79 Pounds	43	13	40	60	60	60
80 - 109 Pounds	49	67	53	40	33	33
110 - 203 Pounds	8	20	7	-	7	7
Total	100	100	100	100	100	100
Average Pounds Per Acre	86.3 lbs.	104.2 lbs.	88.8 lbs.	70.8 lbs.	81.6 lbs.	81.6 lbs.

* Percents are rounded to the nearest whole number.

TABLE XXV

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO ACTUAL POUNDS OF PHOSPHATE AND AVERAGE POUNDS
APPLIED PER ACRE BY 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Pounds of Phosphate Used Per Acre	Yield Group (Pounds lint per acre)					
	Considerably Above Average	Above Average	Below Average	Considerably Below Average		
	700-1760 (N=15) Percent	618-699 (N=15) Percent	505-616 (N=15) Percent	400-499 (N=15) Percent		
Total (N=60) Percent*	75	67	54	93	86	
1 - 79 Pounds						
80 - 109 Pounds	17	26	26	7	7	
110 - 120 Pounds	8	7	20	-	7	
Total	100	100	100	100	100	
Average Pounds Per Acre	75.0 lbs.	76.8 lbs.	87.7 lbs.	63.5 lbs.	72.1 lbs.	

* Percents are rounded to the nearest whole number.

TABLE XXVI

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO ACTUAL POUNDS OF POTASH AND AVERAGE POUNDS APPLIED
PER ACRE BY 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Pounds of Potash Per Acre	Yield Group (Pounds lint per acre)					
	Considerably Above Average		Above Average		Below Average	
	Total (N=60) Percent*	700-1760 (N=15) Percent	618-699 (N=15) Percent	505-616 (N=15) Percent	400-499 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent
1 - 79 Pounds	75	67	54	93	86	
80 - 109 Pounds	17	26	26	7	7	
110 - 120	8	7	20	-	7	
Total	100	100	100	100	100	
Average Pounds Per Acre	75.0 lbs.	72.7 lbs.	89.3 lbs.	63.5 lbs.	74.5 lbs.	

*Percents are rounded to the nearest whole number.

only 14 percent of those in the lowest yield group used this amount. The average total pounds of potash used by the highest and lowest yield groups were 72.7 and 74.5, respectively, a difference of only 1.8 pounds per acre. Data indicate there were no large differences in potash application rates in the highest and lowest yield groups.

Nitrogen, Phosphate and Potash Relationships

When comparing pounds of phosphate and potash, it would seem that a 1 to 1, p to k ratio fertilizer was practically used. If nitrogen data are considered, the higher yield group used a 1.4-1-1 ratio, while the lowest used approximately a 1-1-1 ratio of fertilizers.

Use of Pre-Plant Herbicides

As seen in Table XXVII, all of the producers interviewed were using pre-plant herbicides. Ninety-eight percent were using Treflan and 2 percent were using Planavin.

Use of Pre- and Post-Emergent Herbicides

As seen in Table XXVIII, 89 percent of the cotton producers were using pre-emergent herbicides. Eighty-seven percent of all producers were using Cotoran, and 2 percent were using Prometryne as their pre-emergent chemical. When highest and lowest production groups are compared, it is noted that 100 percent of the former all (100 percent) were using pre-emergent herbicides while 80 percent of the latter were using them. This seems to indicate some slight positive relation between use of pre-emergent herbicides and yield (i.e., those producing highest yields tended to use pre-emergent herbicides).

TABLE XXVII

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO KINDS OF PRE-PLANT HERBICIDES
USED BY 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Kind of Pre-Plant Herbicide Used	Yield Group (Pounds lint per acre)					
	Considerably Above Average	Above Average	Below Average	Considerably Below Average		
	700-1760 (N=15) Percent	618-699 (N=15) Percent	505-616 (N=15) Percent	400-499 (N=15) Percent		
Total (N=60) Percent*	98	93	100	100		
Treflan	100	93	100	100		
Planavin	-	7	-	-		
Total	100	100	100	100		

* Percents are rounded to the nearest whole number.

TABLE XXVIII

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO KINDS OF PRE-EMERGENT HERBICIDE
USED BY 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Kind of Pre-Emergent Herbicide Used	Yield Group (Pounds lint per acre)					
	Considerably Above Average		Above Average		Below Average	
	700-1760 (N=15) Percent	Percent	618-699 (N=15) Percent	Percent	505-616 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent
Total (N=60) Percent*	11	-	7	20	20	20
None	87	100	86	80	80	80
Cotoran	2	-	7	-	-	-
Prometryne	100	100	100	100	100	100
Total						

* Percents are rounded to the nearest whole number.

Data presented in Table XXIX show that 70 percent of the cotton producers used post-emergent herbicides. Sixty percent of all producers were using DSMA + Sufactant (directive) and 2 percent were using Cotoran + Sufactant (directive). One hundred percent of the considerably above average group used post-emergent herbicides while 47 percent of the considerably below average groups uses them. This would indicate a trend toward higher yields with the use of post-emergent herbicides.

Number of Times Cultivated and Effectiveness of Weed Control

Ninety-three percent of the cotton producers interviewed cultivated four or more times as shown in Table XXX. When comparing the highest and lowest groups it is noted that 80 percent of the former cultivated 4 or more times compared to 93 percent of the latter. While 20 percent of the highest yield group cultivated three times, only 7 percent of the lowest yield group did so. It is interesting to note that none of the producers cultivated less than three times. This reduced percent of the considerably above average group cultivating three times may be reflected by the higher usage of herbicides.

Reference to data presented in Table XXXI shows that of all farmers interviewed, 73 percent reported the effectiveness of weed control as being good, 12 percent excellent, 13 percent fair, and 2 percent as poor. One hundred percent of the considerably above group rated their weed control practice as good, only 40 percent of the considerably below average group rated their weed control practices as good or excellent, 53 percent rated them as fair, and 7 percent

TABLE XXIX

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO KINDS OF POST-EMERGENT HERBICIDE
USED BY 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Kind of Post-Emergent Herbicide Used	Total (N=60) Percent *	Yield Group (Pounds lint per acre)			
		Considerably Above Average 700-1760 (N=15) Percent	Above Average 618-699 (N=15) Percent	Below Average 505-616 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent
None	30	-	27	40	53
DSMA + Sufactant (Directive)	68	93	73	60	47
Cotoran + Sufactant	2	7	-	-	-
Total	100	100	100	100	100

* Percents are rounded to the nearest whole number.

TABLE XXX

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO NUMBER OF TIMES COTTON WAS
CULTIVATED BY 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Number of Times Cotton was Cultivated	Yield Group (Pounds lint per acre)					
	Considerably Above Average	Above Average	Below Average	Considerably Below Average		
	700-1760 (N=15) Percent	618-699 (N=15) Percent	505-616 (N=15) Percent	400-499 (N=15) Percent		
Total (N=60) Percent*	93	80	100	100	93	
Four or More						
Three	7	20	-	-	7	
Total	100	100	100	100	100	

*Percents are rounded to the nearest whole number.

TABLE XXXI

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO JUDGMENT OF EFFECTIVENESS OF
WEED CONTROL BY 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Effectiveness of Weed Control	Total (N=60) Percent*	Yield Group (Pounds lint per acre)					
		Considerably Above Average		Above Average		Below Average	
		700-1760 (N=15) Percent	Percent	618-699 (N=15) Percent	Percent	505-616 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent
Excellent	12	-		20		13	13
Good	73	100		80		87	27
Fair	13	-		-		-	53
Poor	2	-		-		-	7
Total	100	100		100		100	100

*Percents are rounded to the nearest whole number.

as poor. There seems to be a definite positive relation between good weed control and higher yields (i.e., good weed control, higher yield).

Source of Seed

Forty-six percent of the cotton producers reported purchasing seed from dealers. Thirty-seven percent listed the ginner as a seed source and 17 percent purchased from other farmers (see Table XXXII). When highest and lowest production groups are compared, it is seen that 67 percent of the highest and only 13 percent of the lowest production groups purchased seed from a ginner. When highest and lowest production groups are considered, 26 percent of the highest and 67 percent of the lowest production groups purchased seed from a dealer. The same general effect is true for the producers who purchased from farmers, 20 percent for the lowest production group and 7 percent for the highest production group.

Drilling of Seed

Seven percent of the 60 cotton producers who drilled seed used 20 to 30 pounds per acre, 53 percent used 31 to 35 pounds per acre and 40 percent used 36 to 45 pounds per acre, as shown in Table XXXIII. The average pounds of seed used per acre for all farmers was 36. When comparing the highest and lowest yield group, it is noted that 7 percent of the considerably above average group used the 20 to 30 pound rate while none of the considerably below average group used this level. For the 31 to 35 pound rate, the data show that in the highest yield group 60 percent were in this category, while only 20 percent in the lowest yield group planted this rate.

TABLE XXXII

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO SOURCE OF SEED USED BY
60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Source of Seed	Yield Group (Pounds lint per acre)					
	Considerably Above Average		Above Average		Below Average	
	Total (N=60) Percent*	700-1760 (N=15) Percent	618-699 (N=15) Percent	505-616 (N=15) Percent	400-499 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent
Dealer	46	26	40	54		67
Ginner	37	67	40	26		13
Farmer	17	7	20	20		20
Total	100	100	100	100		100

* Percents are rounded to the nearest whole number.

TABLE XXXIII

RELATIONS OF 1969 COTTON YIELDS PRODUCED BY 60 FARMERS IN LIMESTONE COUNTY,
ALABAMA, WHO DRILLED SEED TO POUNDS OF SEED PLANTED PER ACRE
AND AVERAGE POUNDS

Pounds of Seed Planted Per Acre	Yield Group (Pounds lint per acre)					
	Considerably Above Average 700-1760 (N=15) Percent	Above Average 618-699 (N=15) Percent	Below Average 505-616 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent		
20 - 30	7	7	20	-	-	-
31 - 35	53	60	67	67	20	20
36 - 45	40	33	13	33	80	80
Total	100	100	100	100	100	100
Total Average Pounds Per Acre	36	36	33	38	37	37

*Percents are rounded to the nearest whole number.

Thirty-three percent of those in the highest yield group planted 36 to 45 pounds of seed per acre while 80 percent of the lowest yield group planted this rate. There seems to be no difference in rate of seed drilled per acre and yield levels.

Early Insecticide Program

Ninety percent of the cotton producers interviewed reported using di-syston for early insect control (Table XXXIV). There was little difference between yield groups except for a slight trend toward the use of more di-syston for the highest yield group (100 percent) as compared to the lowest yield group (87 percent).

Other untabled data show producers did not spray for early insect control.

Use of Defoliant and Kind of Defoliant Used

Reference to data presented in Table XXXV show that 60 percent of the cotton producers used defoliants. When comparing highest and lowest yield groups, it is noted that 100 percent of the considerably above average group used defoliants while only 20 percent of those in the considerably below average group used them. The highest yield group combined the use of defoliants with other production practices than did the lowest yield group. Def was the material used by all producers.

Hour of Harvest

Untabled data show that all of the 60 producers interviewed started harvesting after 9:00 a.m. (when cotton was dry enough to

TABLE XXXIV

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO SYSTEMIC INSECTICIDE USED
BY 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Systemic Insecticide Used	Yield Group (Pounds lint per acre)					
	Considerably Above Average	Above Average	Below Average	Considerably Below Average		
	700-1760 (N=15) Percent	618-699 (N=15) Percent	505-616 (N=15) Percent	400-499 (N=15) Percent		
Total (N=60) Percent*	10	13	13	13		
None	0	13	13	13		
Di-Syston	100	87	87	87		
Total	100	100	100	100		

* Percents are rounded to the nearest whole number.

TABLE XXXV

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO USE OF DEFOLIANTS
BY 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Respondent Used Defoliants	Yield Group (Pounds lint per acre)					
	Considerably Above Average		Above Average		Below Average	
	700-1760 (N=15) Percent	Percent	618-699 (N=15) Percent	Percent	505-616 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent
Total (N=60) Percent*	60	100	60	60	20	20
Yes	60	100	60	60	20	20
No	40	-	40	40	80	80
Total	100	100	100	100	100	100

*Percents are rounded to the nearest whole number.

harvest). No trend concerning the hour of harvesting could be indicated for any of the yield groups.

Plans for Future Management of Cotton Enterprise

Data in Table XXXVI show that 53 percent of the cotton producers planned to maintain present level of production, 28 percent planned to increase production if allotments can be obtained, 13 percent planned to follow soil test recommendations more carefully, and 6 percent planned to add at least one recommended practice.

Forty-seven percent of the considerably above average group and 53 percent of the considerably below average group planned to maintain present level of production. Fifty-three percent of those in the considerably above average category planned to expand production, only 7 percent of those in the considerably below average yield group planned to expand. The reverse was true for those planning to add one new practice since none of the highest producers and 7 percent of the lowest reported such plans. Thirty-three percent of those in the considerably below average yield category planned to follow soil test recommendations more carefully, while no such plans were indicated in the considerably above average yield category.

From this it might be inferred that farmers in the highest yield group were better satisfied with the plan they were using than were those in the lowest.

What Farmers Liked Most About Cotton Production

Reference to Table XXXVII shows that 75 percent of the cotton producers interviewed said "income received" was what they liked

TABLE XXXVI

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO PLANS FOR FUTURE MANAGEMENT OF
COTTON ENTERPRISES BY 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

		Yield Group (Pounds lint per acre)			
		Considerably Above Average 700-1760 (N=15) Percent	Above Average 618-699 (N=15) Percent	Below Average 505-616 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent
Plans for Future Management	Total (N=60) Percent*				
Maintain Present Level of Production	53	47	66	46	53
To Increase Production if Allotments can be Obtained	28	53	27	27	7
Will Follow Soil Test Recommenda- tions More Carefully	13	-	-	20	33
Control Seedling Disease	2	-	-	7	-
Purchase Mechanical Picker	2	-	7	-	-
Use Weed Control	2	-	-	-	7
Total	100	100	100	100	100

*Percents are rounded to the nearest whole number.

TABLE XXXVII

RELATIONS OF COTTON YIELDS PRODUCED TO THINGS LIKED MOST ABOUT COTTON PRODUCTION
MENTIONED BY 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Thing Liked Most About Cotton Production	Total (N=60) Percent*	Yield Group (Pounds lint per acre)			
		Considerably Above Average 700-1760 (N=15) Percent	Above Average 618-699 (N=15) Percent	Below Average 505-616 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent
Income Received	75	80	73	60	87
Like to See Cotton Grow	15	7	13	27	13
Best Suited for Cropland	8	13	7	13	-
Available Market and Adaptability	2	-	7	-	-
Total	100	100	100	100	100

* Percents are rounded to the nearest whole number.

most about cotton production. Fifteen percent "liked to watch cotton grow;" 8 percent said that cotton was "best suited for crop land;" and 2 percent, "available market and adaptability."

When the highest and lowest yield groups are compared, it is seen that fewer of the former (80 percent) than of the latter (87 percent) mentioned income received. Seven percent of the considerably above average grower as compared to 13 percent of the lowest yield group reported liking to see cotton grow. Thirteen percent of the highest yield group as compared to not any of the lowest yield group was best suited for their crop land.

What Farmers Disliked Most About Cotton Production

As seen in Table XXXVIII, 46 percent of the farmers interviewed had no dislikes about cotton production; 32 percent disliked the need for weed and grass control; 10 percent disliked the high cost of production; 3 percent, insect control; 3 percent labor; and 2 percent each, government controls and soil preparation. Fifty-three percent of those in the highest yield group had no dislikes, while 27 percent of those in the lowest group had no dislikes, 66 percent of the considerably below average disliked weed and grass control while none of the considerably above average disliked this practice. Thirty-three percent of the considerably above average group disliked high cost of production while none of the considerably below average listed this as a dislike. Data seem to indicate less concern for cultural practices and greater attention to financial aspects by the highest yield group than by the lowest yield group.

TABLE XXXVIII

RELATIONS OF COTTON YIELDS PRODUCED TO THINGS DISLIKED MOST ABOUT COTTON PRODUCTION
MENTIONED BY 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Things Disliked Most About Cotton Production	Total (N=60) Percent*	Yield Group (Pounds lint per acre)			
		Considerably Above Average	Above Average	Below Average	Considerably Below Average
		700-1760 (N=15) Percent	618-699 (N=15) Percent	505-616 (N=15) Percent	400-499 (N=15) Percent
No Dislikes	46	53	59	46	27
Weed and Grass Control	32	-	13	47	66
High Cost of Production	10	33	7	-	-
Insect Control	3	7	7	-	-
Labor	3	-	7	-	7
Weather Conditions	2	7	-	-	-
Soil Preparation	2	-	7	-	-
Government Controls	2	-	-	7	-
Total	100	100	100	100	100

* Percents are rounded to the nearest whole number.

Reasons Why Cotton Farmers Do Not Adopt Recommended Cotton Management Practices

One hundred percent of the 60 cotton producers interviewed listed lack of adequate machinery and equipment as the first, second or third most important reasons why cotton farmers do not adopt recommended cotton management practices (see Table XXXIX). One hundred percent listed the cost of the practices outweighs the benefits either first, second, or third, 88 percent "didn't have the technical knowledge needed," 8 percent "didn't believe practices were sound," and 4 percent "suggested more rewarding activities claim owner's time and money."

Few differences of consequence seem to exist when yield groups are compared. However, a higher percent of those in the highest yield group (100 percent) than in the lowest (80 percent) felt that producers didn't have the technical knowledge needed. None of those in the considerably above average group named "don't believe practices sound" as being a reason why cotton farmers do not adopt recommended practices, while only 13 percent for the considerably below average group named this reason. Further, it is interesting to note that 7 percent of those suggesting "more rewarding activities claim owner's time and money" were in the considerably below average group.

Sources of Advice Sought

Ninety-eight percent of the 60 cotton producers interviewed sought advice from neighbors or friends who also were cotton growers, as shown in Table XL. Ninety-five percent sought advice from the

TABLE XXXIX

PERCENTS OF 60 COTTON PRODUCERS IN LIMESTONE COUNTY, ALABAMA, STATING VARIOUS REASONS WHY COTTON FARMERS DO NOT ADOPT RECOMMENDED COTTON MANAGEMENT PRACTICES (IN THE TOP 3)*

	Total (N=60) Percent**	Yield Group (Pounds lint per acre)			
		Considerably Above Average 700-1760 (N=15) Percent	Above Average 618-699 (N=15) Percent	Below Average 505-616 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent
Reasons Why Cotton Farmers do not Adopt Recommended Practices					
Lack of Machinery and Equipment	100	100	100	100	100
The Cost of the Practices Out- weighs the Benefits	100	100	100	100	100
Don't have the Technical Knowledge Needed	88	100	86	87	80
Don't Believe Practices are Sound	8	-	7	13	13
More Rewarding Activities Claim Owner's Time and Money	4	-	7	-	7

* Each farmer gave three reasons why cotton growers do not adopt recommended cotton production and marketing practices, therefore, percents in the table total 300 percent instead of 100 percent.

** Percents are rounded to the nearest whole number.

TABLE XL

RELATIONS OF 1969 COTTON YIELDS PRODUCED BY ADVICE SOUGHT FROM VARIOUS SOURCES ABOUT COTTON
PRODUCTION AND MARKETING BY 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Source of Advice	Total (N=60) Percent*	Yield Group (Pounds lint per acre)			
		Considerably Above Average 700-1760 (N=15) Percent	Above Average 618-699 (N=15) Percent	Before Average 505-616 (N=15) Percent	Considerably Below Average 400-499 (N=15) Percent
Neighbor or Friend	98	100	100	93	100
County or Assistant Agent	95	93	87	100	100
Seed, Fertilizer, or Pesticide Dealer	95	87	100	100	93
Cotton Ginner	82	100	80	80	67
Banker or PCA Representative	75	87	67	60	87
Cotton Buyer	75	80	73	80	67
Equipment Dealer	60	87	47	73	33
SCS Representative	27	33	27	33	13
Extension Cotton Specialist	20	40	20	13	7
Vocational Agriculture Teacher	13	-	20	20	13
FHA Representative	7	13	7	7	-
Total Average Percent	59	65	57	60	52

* Percents are rounded to the nearest whole number.

county or assistant agent, 95 percent sought advice from seed, fertilizer, or pesticide dealer, 82 percent from cotton ginner, 75 percent from cotton buyers, 60 percent from equipment dealers, 27 percent from Soil Conservation Service (SCS) representative, 20 percent from Extension cotton specialist, 13 percent from vocational agriculture teacher, and 7 percent from Farmers Home Administration (FHA) representative.

When the highest and lowest yield groups are compared, it may be seen that 100 percent of the highest and the lowest yield groups sought advice from neighbors or friends. At the same time, higher percents of the lowest than of the highest yield group (100 percent versus 93 percent) sought advice from the county or assistant agent. This was also true for the seed, fertilizer and pesticide dealer (93 percent versus 87 percent, respectively). Equal percents of those in the highest and lowest yield groups (87 each) sought the advice of bankers or PCA representative. Eighty-seven percent of those in the highest yield group sought information from the cotton ginner as compared to 67 percent for those in the lowest yield groups and the respective percents were: (1) cotton buyer--80 and 67; (2) equipment dealer--87 and 33; (3) SCS representative--33 and 13; (4) extension cotton specialist--40 and 7; (5) vocational agriculture teachers--0 and 13; and (6) FHA representative--13 and 0. The major difference was that the considerably above average group consulted more with the cotton specialist and equipment dealers than did the considerably below average group.

Source of Marketing and Production Information

Concerning other sources of information cotton producers used, Table XLI shows that 100 percent used farm magazines, daily newspapers and newsletters. Ninety-two percent of the producers used university bulletins and publications; 92 percent, television; 78 percent, radio; 68 percent, farm meetings; 67 percent, weekly newspaper; 33 percent, field days and tours; and 12 percent, commercial (seed company) bulletins.

Comparison of the data relating to the considerably above and considerably below average yield groups show that an equal or higher percentage of the former than the latter used all the sources mentioned. All of the producers gave daily newspapers, farm magazines and newsletters, and 87 percent of each group listed television. Other particularly large differences between the highest and lowest yield groups are shown for the following: (1) farm meetings--a difference of 47 percent; (2) commercial (seed company) bulletins--a difference of 20 percent; (3) weekly newspapers--a difference of 13 percent; and (4) radio--a difference of 13 percent. The highest yield group exceeded the lowest yield group for the sources named. This would seem to indicate a trend toward highest yields being associated with the use of the many sources of information available. Smaller differences in favor of the highest producers existed for (1) Auburn University bulletins and publications--a difference of 6 percent, and (2) field days and tours--a difference of 6 percent.

Finally, the data indicated that the considerably above average producers group sought information from a larger number of sources than did the considerably below average group.

TABLE XLI

RELATIONS OF 1969 COTTON YIELDS PRODUCED TO SOURCES OF PRODUCTION AND MARKETING
INFORMATION SOUGHT BY 60 FARMERS IN LIMESTONE COUNTY, ALABAMA

Source of Information	Yield Group (Pounds lint per acre)					
	Considerably Above		Above Average		Below Average	
	700-1760 (N=15) Percent	Percent	618-699 (N=15) Percent	Percent	505-616 (N=15) Percent	400-499 (N=15) Percent
Total (N=60) Percent*						
Daily Newspapers	100	100	100	100	100	100
Farm Magazines	100	100	100	100	100	100
Newsletters	100	100	100	100	100	100
University Bulletins and Publications	92	93	100	87	87	87
Television	92	87	93	100	100	87
Radio	78	80	87	80	80	67
Farm Meetings	68	87	73	73	73	40
Weekly Newspapers	67	80	73	47	47	67
Field Days and Tours	33	13	38	33	33	7
Commercial (seed company) Bulletins	12	20	20	7	7	-
Total Average Percent	74	76	78	73	73	66

*Percents are rounded to the nearest whole number.

CHAPTER V

SUMMARY

Approximately 60 percent of Limestone County's total farm income was derived from the sale of cotton in 1970. Gross cotton sales totaled about \$9,855,000. Limestone County's four-year (1966-1969) average per acre yield was 362 pounds of lint. This was two pounds more per acre than the state average for the same period. Nevertheless, a study of Limestone County cotton yield data showed wide variations in annual per acre cotton yields, ranging from an extreme low of 10 pounds produced on one farm during an undesirable cotton year to a high of 1,760 pounds of lint per acre on another during the best year.

Since information was not available concerning current grower practices, extension personnel had no definite way of knowing which practices needed emphasis if cotton producers were to be assisted in their efforts to grow more lint per acre for higher net returns.

The general purpose of this investigation was to establish a benchmark (based on a survey of the cotton growers and their practices) that could be used as a basis for formulating a five-year plan of work and for planning further, more detailed research. A special interview schedule was developed and used to collect data concerning the characteristics of cotton producers and their farms, production practices followed, and factors influencing them to adopt recommended practices.

A stratified random sample of 60 from the 1,743 cotton producers in Limestone County was selected and interviewed for the study. Growers represented four main yield groups, namely: (1) considerably below average; (2) below average; (3) above average; and (4) considerably above average. Equal numbers of growers were selected from each of the four yield categories.

A review of related literature available disclosed that other relevant studies have been conducted. Findings in the present study tended to verify those reported from research done elsewhere.

Findings Related to Characteristics of Cotton Producers and Their Farms

With regard to findings related to the objective of characterizing cotton producers and their farms in the yield groups considered in this study, a number of summary statements may be made.

Survey data comparing educational levels indicated that the average grade level of those in the highest yield group was 10.4 years compared to 11.1 years for the lowest yield group.

Seventy-three percent of the farmers interviewed were 45 years of age or over (50.1 years average age). The highest yield group was, on the average, slightly younger than the lowest yield group (49.1 years and 53.0 years, respectively).

Eighty-five percent of the cotton producers surveyed were full-time farmers and 8 percent were part-time farmers, while 67 percent of the cotton producers depended upon cotton as their major source of income. Eighty-seven percent of the highest yield group and 27 percent of the lowest yield group depended upon cotton as their major income source.

Cotton was grown by the owner on 53 percent of all farms surveyed, 27 percent was produced by farmers who both owned and rented, and 20 percent rented their cotton allotment.

Eighty percent of the farmers in the lowest yield group planted less than 100 acres of cotton in 1970; whereas, only 33 percent in the highest yield group planted this small an amount.

Untabled data showed that, of the cotton producers interviewed, all reported using a mechanical harvester.

Findings Related to Cotton Production Practices

The farmers in the highest yield group had a slightly higher average practice diffusion rating (5.00) than that recorded for the lowest yield group (4.73). Both, in the main, were using recommended practices.

Ninety-three percent of the cotton producers interviewed, on the average, were in the "using" stage with regard to each of the 12 recommended cotton production practices. Of those in the highest yield group, 100 percent, on the average, were "using" each practice, while 93 percent of those in the lowest yield group were doing so also.

All of the farmers interviewed reported following soil test recommendations in cotton fertilization. However, 87 percent of the lowest yield group reported not having their soil tested before 1970. Those in the highest group reported testing as early as 1965.

Fertilizer usage data showed that the highest yield group used an average of 583 total pounds of fertilizer per acre and the lowest yield group 545 pounds. Those in the highest yield group

used an average of 104.2 pounds of nitrogen per acre as contrasted to only 81.6 pounds for those in the lowest yield group.

An average of 75 pounds of phosphate was used by the cotton producers. Little difference was noted between highest and lowest yield groups.

The average total pounds of potash used by the highest and lowest yield groups were 72.7 and 74.5, respectively.

All (100 percent) of the cotton producers interviewed used pre-plant herbicides. Eighty-nine percent of the cotton producers interviewed were using pre-emergent herbicides. When the highest and lowest production groups were compared, 100 percent of the former and 80 percent of the latter were using the pre-emergent herbicides. The data showed that 100 percent of the highest and only 47 percent of the lowest producers were using post-emergent herbicide.

Thirty-three percent of the farmers in the highest yield group as compared to 80 percent in the lowest drilled 36 to 45 pounds of seed per acre. However, the actual average rate for the former was 36 pounds of seed drilled compared to 37 pounds for the latter.

All of the farmers interviewed used Di-syston for early season insect control in 1970.

Sixty percent of the farmers interviewed used a defoliant. All (100 percent) of the highest yield group used a defoliant, while only 20 percent of the lowest yield group so reported.

Fifty-three percent of the farmers interviewed planned to continue the same production practices the following year. Fifty-three

percent of the highest yield group planned to increase production if allotments could be obtained, while 7 percent in the lowest yield group planned to do so. Seven percent of the lowest yield group planned to add one new practice. Thirty-three percent of the lowest and none of the highest planned to devote more attention to fertilizing based on soil test recommendation.

Findings Related to Factors Influencing Practice Adoption

Seventy-five percent of the cotton producers interviewed said "income received" was what they liked most about cotton production. Eighty percent of those in the highest yield group listed income as being most important, while 87 percent of the lowest yield group did so. Other reasons listed by both groups were, "like to watch it grow," "best suited for crop land," and "available markets and adaptability."

The data relating what farmers disliked most about cotton production indicated that 66 percent of the lowest yield group disliked weed and grass control, while 53 percent of the highest yield group listed no dislikes at all.

One hundred percent of those interviewed listed the "lack of adequate machinery and equipment" as the reason why farmers frequently do not adopt recommended cotton management practices. One hundred percent listed the "cost of the practices outweighs the benefits," 88 percent named "don't have the technical knowledge needed," 8 percent suggested "don't believe practices are sound," and 4 percent listed "more rewarding activities claim owner's time and money." While

100 percent of the highest producers felt they lacked technical knowledge needed, only 80 percent of the lowest group so indicated.

All (100 percent) of both the highest and the lowest yield groups sought advice from neighbors or friends. The County or the Assistant Agent had counseled with 100 percent of the lowest and 93 percent of the highest yield groups.

Ninety-three percent of the lowest yield group and 87 percent of the highest yield group had sought information from seed, fertilizer or pesticide dealer. All of the highest producers and only two-thirds of the lowest mentioned cotton ginners. Equal (87 percent) of the highest and lowest yield groups sought information from bankers or PCA representatives.

All of the farmers in the highest yield and in the lowest yield groups used daily newspapers, farm magazines, and newsletters as sources of information on cotton production and marketing. Sources such as university bulletins and publications, television, radio, farm meetings, weekly newspapers, field days and tours, and commercial (seed company) bulletins, in that order, also were popular; larger percentages always being reported in the highest yield group than in the lowest.

Suggestions for Use of Findings and for Further Research

The findings in this study will be used in planning Limestone County's annual plan and program of work. Emphasis will be placed on critical practices not being used generally by cotton producers. The cotton planting date and weed control practices need particular attention, especially with producers in the lowest yield group.

The findings of this study could be used as a basis for further research in other production enterprises. Soybean production has expanded greatly in Limestone County. A study similar to the present one in the area of soybeans would help in making educational plans for trying to meet the needs of producers.

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APPENDIX

THE COOPERATIVE EXTENSION SERVICE, AUBURN UNIVERSITY

AUBURN, ALABAMA

LIMESTONE COUNTY COTTON PRODUCTION SURVEY

INTRODUCTION: I am helping with a survey that is being made by Auburn, University. The purpose is to obtain information to use in planning programs helpful to cotton growers. The answers you give will be added to those given by other cotton growers who are being interviewed in this county and other parts of the state to get a complete picture of the cotton situation. Could I have a little of your time to go over these questions?

1. About how many acres do you have in your farm (s)? Cropland?
Improved pasture? Unimproved pasture? Woodland? Other land?

a. Total (b+c + d + e + f) land in farm (s) _____ acres
b. Crop land _____ acres
c. Improved pasture _____ acres
d. Unimproved pasture _____ acres (Check to be sure
e. Woodland _____ acres items add up to
f. Other land _____ acres total in a)
2. What was your cotton allotment last year? _____ acres
3. How many acres of cotton did you plant last year? _____ acres
4. TO THE INTERVIEWER: If respondent planted less than allotted,
ask him "Why?" _____

5. How many acres of cotton did you harvest last year?
_____ acres. Per acre lint yield? _____
6. How much of the harvested acreage was _____ Owned, _____ Cash
rented, _____ Shared?
7. Major occupation of the respondent
 - a. Full-time farmer _____
 - b. Part-time farmer _____
 - c. Business (specify) _____
 - d. Professional (specify) _____
 - e. Wage earner _____
 - f. Housewife or widow _____
 - g. Retired _____
 - h. Other (Specify) _____
8. Is cotton your major source of income?
 - a. Yes _____
 - b. No _____
9. If your answer to question #8 above is NO, what is your major
source of income? _____

10. Would you please complete this sentence? "The thing I like most about cotton production is _____"

TO THE INTERVIEWER: If the respondent mentions more than one thing, write down all of them and ask him "which is most important?" Then underscore it.

11. Would you please complete this sentence? "The thing I dislike most about cotton production is _____"

TO THE INTERVIEWER: If the respondent mentions more than one thing, write down all of them and ask him "which is most important?" Then underscore it.

TO THE INTERVIEWER: The purpose of the next question is to find out if the respondent--

- (1) is aware of certain recommended practices
- (2) is interested in using them
- (3) has tried them
- (4) is still using them, or will use them when the need arises
- (5) and his reason for never trying the practices, or for not using them after trying them.

I have 12 cotton production practices. "Would you tell me whether or not you have tried them?" (Check Yes or No in the "Has Tried" column below.)

In this reply, the respondent may also answer the other four points. If not, INTERVIEWER WILL ASK APPROPRIATE QUESTIONS TO OBTAIN THE ANSWERS. Check in appropriate columns below.

12. Cotton Production Practices	Read or heard of		Inter- ested		Plans to try		Has Tried		Is Using	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
(1) Planted a cotton variety or varieties recommended last year (as in EC p-42 or Performance Trials-- that year)										

1. Reasons for never trying practice OR not using after trying _____

	Read or		Inter-		Plans		Has		Is	
	heard		ested		to		Tried		Using	
	of		Yes	No	Yes	No	Yes	No	Yes	No
(2) Planted between April 10 - 25 last year (see Ext. Pub. P-42)	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)

1. Reasons for never trying practice OR not using it after trying _____

(3) Used the recommended seeding rate and procedure for the kind of seed used										
---	--	--	--	--	--	--	--	--	--	--

(15-20# Acid delinted seed or 30-40 lbs machine delinted seed)

1. Reasons for never trying practice OR not using it after trying _____

(4) Used recommended material to help control seedling diseases (Terrachlor Super X) 10% - 10-12 #/A. or Demosan 10% - 10#A										
---	--	--	--	--	--	--	--	--	--	--

1. Reasons for never trying practice OR not using it after trying _____

(5) Used recommended procedure to help control seedling diseases (hopper box or furrow)										
---	--	--	--	--	--	--	--	--	--	--

1. Reasons for never trying practice OR not using it after trying _____

(6) Fertilized cotton land according to soil test recommendations (lime, fertilizer and boron)										
--	--	--	--	--	--	--	--	--	--	--

1. Reasons for never trying practice OR not using it after trying _____

	Read or heard of		Inter- ested		Plans to try		Has Tried		Is Using	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
(7) Effectively controlled weeds last year by using recommended procedures (see EC P-41B)										
1. Reasons for <u>never trying</u> practice OR <u>not using</u> it after trying _____										
(8) Effective controlled insects last year by using recommended procedures (See Ext. Circular E-11)										
1. Reasons for <u>never trying</u> practice OR <u>not using</u> it after trying _____										
(9) Made decisions concerning use of insecticides based on actual field counts (See Ext. Circular E-11)										
1. Reasons for <u>never trying</u> practice OR <u>not using</u> it after trying _____										
(10) Harvested only dry (roughly 8-10% moisture) cotton free from dew and/or rain										
1. Reasons for <u>never trying</u> practice OR <u>not using</u> it after trying _____										
(11) Hand cotton classified by the USDA Classing office										
1. Reasons for <u>never trying</u> practice OR <u>not using</u> it after trying _____										
(12) Getting the advice of professionals in the area of cotton production and marketing										
1. Reasons for <u>never trying</u> practice or <u>not using</u> it after trying _____										

- (13) During the past year have you talked to anyone about your cotton production and marketing?
 a. Yes _____ b. No _____

TO THE INTERVIEWER: If No, skip to Question #15. If yes, ask Question #14 first.

- (14) With whom have you talked? (Check one or more of the following. If respondent gives names, write them at the side and check list later.)

a. County or assistant agent _____
 b. Extension cotton specialist _____
 c. Cotton ginner _____
 d. Cotton buyer _____
 e. Vo-Ag teacher _____
 f. SCS representative _____
 g. FHA representative _____
 h. Equipment dealer _____
 i. Seed, fertilizer or pesticide dealer or salesman _____
 j. Banker or PCA representative _____
 k. Neighbor or friend (cotton grower) _____
 l. Other (specify) _____

- (15) From which of the following sources did you receive useful information concerning your cotton production and marketing last year?

a. Univ. bulletins and publications _____
 b. Commercial (seed company) bulletins _____
 c. Farm magazines _____
 d. Daily newspapers _____
 e. Weekly newspapers _____
 f. Radio _____
 g. Television _____
 h. Farm meetings _____
 i. Field days and tours _____
 j. Newsletters _____

- (16) What was the highest grade level that you completed?
 Circle one.

0	123456789	10	11	12	1	2	3	4	Bachelor's	Master's	Doctor's
None	Grade School	H. S.	College	Underg.	Degree	Degree	Degree	Degree	Degree	Degree	Degree

- (17) Age of respondent?

a. Under 25 _____	e. 55 - 64 _____
b. 25 - 34 _____	f. 65 - 74 _____
c. 35 - 44 _____	g. 75 - or more _____
d. 45 - 54 _____	

- (18) What plans do you have for the future of your cotton enterprise? Expansion? (Including use of the 12 production practices listed plus others mentioned)

- (19) (If respondent says he has no plans in question #18 above, ask "why not?").

- (20) How many weeks ahead of planting did you begin seedbed preparation last year? _____ weeks

- (21) Were stalks shredded before you prepared your land?
Yes _____ No _____

- (22) Did you prepare a well-pulverized, firm smooth seedbed?

Yes _____ No _____

- (23) What size planter did you use? _____ One-row, _____ Two-row, _____ Four-row, _____ Six-row.

- (24) Did you periodically check the adjustment of your planter to assure a uniform row width?

Yes _____ No _____

- (25) From whom did you get your seed? _____ Ginner, _____ Dealer, _____ Farmer, _____ Other (Specify).

- (26) Was the seed you planted _____ Certified? _____ Registered? (Check if appropriate).

- (27) How did you plant? (How much seed per acre and kind of seed and procedure used) Lbs. seed per acre _____

Kind of seed _____

Procedure used _____

- (28) About how deep did you generally plant your cotton seed? _____ 1/2", _____ 3/4", _____ 1", _____ Other (Specify)

- (29) In the main, of what texture does your cotton land tend to be?
(Check one) a. _____ Sandy soil, b. _____ Loamy soil, c. _____ Clay soil.
- (30) Have you ever had the soil on your cotton land tested?
_____ Yes _____ No
- (31) (If Yes to question #30) By whom was it done _____ Auburn University, _____ Federal Chemical Co., _____ U.S. Soil Testing, _____ Other (Specify) _____
- (32) (If Yes to question #30) When?(tested) _____ (Most recent year)
- (33) How much fertilizer did you apply?
_____ Grade _____ Lbs. per acre
_____ Grade _____ Lbs. per acre
_____ Grade _____ Lbs. per acre
- (34) (If Yes to question #30) was the pH _____ Under 6.0 _____ above 6.0?
- (35) Did you use boron? _____ Yes _____ No.
- (36) How did you control weeds last year? Please check appropriate sequence.
- a. Used a pre-plant herbicide (If so, which one or ones--
Treflan _____ Planavin _____)
- b. _____ Used a pre-emergent herbicide (If so, which one or ones?)
- (1) _____ Diuron (Karmex)
(2) _____ Prometryne (Caparol)
(3) _____ Cotoran
(4) _____ Other (Specify) _____
- c. _____ Used a post-emergent herbicide (If so, which one or ones?)
- (1) _____ Herbicidal oil
(2) _____ DSMA + surfactant (_____ Directive _____ Broadcast)
(3) _____ Prometryne + surfactant
(4) _____ Cotoran + surfactant
(5) _____ Other (specify) _____
- d. _____ Cultivated (If so, how many times?)
- (1) _____ One (3) _____ Three
(2) _____ Two (4) _____ Four or more.

e. _____ Used "flame" burner (If so, how many times?)

- | | |
|---------------|------------------------|
| (1) _____ One | (3) _____ Three |
| (2) _____ Two | (4) _____ Four or more |

(37) How effective would you say your weed control was last year?
 _____ Excellent, _____ Good, _____ Fair, _____ Poor.

(38) How did you control insects last year? (Please check appropriate sequence)

a. _____ Used a systemic insecticide at planting time
 (If so, which?)

- | |
|---------------------------------|
| (1) _____ Di-Syston |
| (2) _____ Thimet |
| (3) _____ Other (specify) _____ |

b. _____ Sprayed at the two-leaf stage of plant growth.
 (If so, what did you use?) _____

(39) How many times did you poison insects last year? _____

(40) Which insect or insects gave you the greatest problems?

(41) What insecticide(s) did you use? _____

(42) How did you decide when to use insecticides?

(43) How effective was your insect control last year?

_____ Excellent, _____ Good, _____ Fair, _____ Poor.

(44) How much of your harvested acreage of cotton was harvested mechanically? _____%

(45) Do you own a mechanical picker? _____ Yes _____ No
 (If Yes, how many row? _____ Rows.)

(46) If you own a picker (Yes in question #45), how many acres were harvested with it last year? _____ acres

(47) If you harvested any acreage mechanically last year, did you use a defoliant? _____ Yes _____ No.

(48) If you used a defoliant, what did you use?

(49) What time of day did you usually start to harvest?

_____ Before 9 a.m. _____ After 9 a.m.

(50) How much turn-row space did you leave? _____ Feet

(51) We have listed on these cards some reasons why cotton growers sometimes do not adopt recommended cotton production and marketing practices. (Hand respondent set of cards). Now, here is what we would like you to do:

a. Please look through all cards, read each one; and pick out the 3 cards that show why you believe cotton growers do not use better production practices.

After you have selected 3, please hand me the rest.

b. Now, these 3 reasons are not of the same importance; so please go through them and decide which one is probably of most importance. Please give me the number on the back of the card. Also, please do this with the other 2 cards.

Rank	1	2	3
------	---	---	---

Card Number

c. Are there any other reasons why you believe cotton growers do not adopt recommended cotton production and marketing practices? _____

NAME OF RESPONDENT _____

NUMBER _____

QUESTION FOR THE INTERVIEWER TO ANSWER:

- (53) All people do not adopt practices at the same rate or time. About where would you place the respondent with respect to adopting new recommended cotton production and management practices?
- a. _____ Among the first few
 - b. _____ Soon after the first few
 - c. _____ Sooner than average
 - d. _____ A little later than most
 - e. _____ Among the last few
- (54) Is the respondent
- a. _____ Man? b. _____ Woman?
- (55) Interest of respondent in improving cotton production and marketing? (In interviewer's judgment)
- a. _____ Very interested
 - b. _____ Somewhat interested
 - c. _____ Indifferent
 - d. _____ Not interested
- (56) Respondent's attitude toward the survey? (In interviewer's judgment)
- a. _____ Friendly
 - b. _____ Somewhat friendly
 - c. _____ Indifferent
 - d. _____ Antagonistic
- (57) Should the respondent pay more attention to his cotton production and marketing?
- a. _____ Yes b. _____ No c. _____ Uncertain
- (58) How well do you know the respondent?
- a. _____ Very well
 - b. _____ Fairly well
 - c. _____ Not very well
 - d. _____ Not at all

VITA

Fletcher M. Patterson was born April 24, 1918. His parents were Thomas F. and Meedy V. Patterson. He attended Union Elementary School, Anderson Junior High school and graduated from Lauderdale County High School at Rogersville, Alabama. He spent two years in the United States Army in the Pacific Theater of operations.

His undergraduate study was done at Auburn University, Auburn, Alabama, where he received his B.S. Degree in Agricultural Education with a minor in Agricultural Science. His graduate study was at The University of Tennessee, Knoxville, Tennessee.

He was reared on a farm and was active in 4-H Club work. He has been employed as an Extension Farm Agent in Madison, Cherokee and Limestone Counties, Alabama for 18 years. He is a member of the Baptist Church. He is married to the former Wilma Camp and has two sons, Paul and Patrick.