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# Alabama Agricultural Experiment Station

OF THE

## Alabama Polytechnic Institute

AUBURN

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TRACTOR CROSSING BROAD-BASE TERRACE

### TRACTOR SITUATION IN ALABAMA

By

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*Summary of Tractor Survey Conducted by the Department of  
Agricultural Engineering of the Alabama  
Polytechnic Institute*

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In the fall of 1921 questionnaires were sent to 575 Alabama tractor owners asking them a series of questions about the operation of their tractors. Replies were received from 125. Very few of the questionnaires, however, were completely filled out. Questions of a more or less technical nature, such as those dealing with lubrication, cooling, etc., were answered so vaguely as to make the results impossible of tabulation. On the other hand a large number of the more important questions were answered very definitely and are tabulated in the following report.

The question, "Has your tractor paid you?" was answered by 121 farmers; 73 said "yes;" 32, "no;" and 16 were uncertain. Seventy-four, however, reported it a profitable investment; 27, an unprofitable investment; and 20 were uncertain.

The farms on which these tractors were operated were classified according to acres farmed. The following table shows the relation of acreage to tractor profits:

Size of farm Acres	Number Tractors	Profit- able	Unprofit- able
Under 50 -----	7	7	0
59 to 100 -----	12	9	3
100 to 150 -----	15	12	3
150 to 200 -----	13	8	5
200 to 250 -----	8	4	4
250 to 500 -----	16	11	5
500 to 1000 -----	18	13	5
1000 to 2000 -----	3	2	1
Over 2000 -----	4	4	0
Average size was -----		364.1 acres	

TABLE No. 1

This table indicates that size of farm is not necessarily the most important factor in determining tractor profits or losses. On all farms under 50 acres tractors were reported profitable, and reports from farms from 100 to 150 acres indicate that this size is just as profitable as farms of 500 to 1000 acres for tractor farming. A larger number of questionnaires might change this summary. However, the above table is sufficient to show that there is only a loose correlation.

The period of tractor operation was answered as follows: 11 had used their tractors less than one year; 60, one year; 29, two years; 10, three years; 3, four years; 3, five years; 1, eight years; and 3 did not report.

The two-plow tractor was the most popular size. The number of plows drawn follows: 89, two plows; 22, three plows; 4, four plows; 1, five plows; and three were not used for plowing. If operated as instructed by manufacturers these tractors would have drawn plows as follows: 86, two plows; 31, three plows; and 4, four or more plows. This indicates that Alabama tractors are not generally over-loaded.

The types of plows in use were: 86, disc; 24, mold-board; and 2, both. Others did not answer.

#### REGARDING SIZE

Answering the question, "Would you buy the same size tractor if buying another?" all but 10 replying said "yes." Four of 56 smaller tractor owners replying would get a larger size. One out of 22 three-plow tractor owners replying would get a larger tractor, while 4 would buy smaller tractors.

Of the three-plow tractor owners 11 considered a disc harrow of 32 discs a correct load. Of the two-plow tractor owners 34 used disc harrows; 1 reported a 40 disc harrow unsatisfactory on clay land; 17 reported a 32 disc harrow satisfactory on clay; 2 reported this size unsatisfactory on clay; 1 had difficulty with 28 discs on clay. All others used a 28 disc harrow on clay, or a smaller size on sand and reported them satisfactory, indicating that the type of soil largely determines the size of harrow to buy. This is due to footing.

The following table shows the number of profitable and unprofitable tractors of the different sizes on farms of different sizes:

Acres in farm	2-Plow					3-Plow					Over 3-Plow				
	Profitable		Future Tractor			Profitable		Future Tractor			Profitable		Future Tractor		
	No	Yes	Larger	Smaller	Same	No	Yes	Larger	Smaller	Same	No	Yes	Larger	Smaller	Same
- 50		8			5										
50- 100	1	10			10	2			1	1					
100- 150	7	7			11		2		1	1					
150- 200	1	4			4	1	3		1	3					
200- 250	4	3			4		1			1					
250- 500	2	10	1		9	2	5		1	4	2				1
500-1000	2	7	3		5	1	4	1		4	1		1		1
1000-2000	1	1			2	1	2		1	2					
2000 & over	1	1			2		1			1		1			1
TOTAL	19	51	4	0	52	7	18	1	4	17	3	2	0	1	2

TABLE No. 2

Answers to questions regarding repairs were very informing. Three had to get repairs from Wisconsin; 1, St. Louis; 1, Cleveland; 10 reported their nearest supply house from 100 to 200 miles away; 6, 50 to 100 miles; 6, 25 to 50 miles; 13 did not report; and 65, a distance less than 25 miles, or from a local dealer. Sixteen reported that they secured supplies from a branch house, but did not state the distance.

The following table shows the number of days each year tractors were used for belt work and for field work:

Belt Work No. Tractors	Days	Field Work No. Tractors	Days
7	None	4	None
4	0- 5	3	0- 10
5	5- 10	7	10- 20
10	10- 15	28	20- 40
3	15- 20	17	40- 60
13	20- 30	17	60- 80
2	30- 40	3	80-100
6	40- 50	6	100-120
4	50- 60	2	120-140
7	60- 80	2	140-160
3	80-100		
4	100-150		
3	150 and over		
Average number days of belt work		35.1	
Average number days of field work		50.2	

TABLE No. 3

Twenty-eight of those using tractors for belt work considered them profitable, and 14, unprofitable.

#### ACRES PLOWED

The number of acres reported plowed by each tractor in 1920 varied from 10 to 600. Only 83 of those replying gave definite acreages. Ten of them plowed over 200 acres and 30 over 100 acres. The average was 99.9 acres. All but three that plowed over 100 acres reported their tractors profitable.

Seventy-two reported acreages on which disc harrows were used as follows: 15, over 200 acres; 33, over 100 acres; and all others less than 100 acres. The average disked and harrowed was 122 acres.

To the question, "Did the tractor enable you to plow more land?" 103 replied, 78 answering "yes" and 24, "no."

To the question, "Has the tractor enabled you to plant your crop in better condition?" 104 replied, 99 saying "yes" and 5, "no." These are two of the largest factors in profitable tractor operation, and many who reported their tractors unprofitable said that they had benefitted them in one or both ways.

To the question, "Has it enabled you to sell any mules?" 100 replied, 39 saying "yes;" 61, "no." It appears that with increased power many farmers are working more of their land instead of substituting power for mules. The fact that 39 out of 100 or 39 percent could sell mules is rather surprising when the shortage of power on most Alabama farms is considered.

The area of fields on different farms was reported as follows: 41 had all their land in fields over 10 acres, with only 6 unprofitable tractors; 15 had many small fields and 4 of them reported their tractors unprofitable. Many of the replies were not sufficiently definite to include in the summary.

As to the cost of repairs the following gives the number and approximate amount of repairs. Many answers, however, were indefinite, and others said they had no record.

## REPAIR EXPENSES

Cost of repairs varied as follows: 25, less than \$25.00; 7, \$25.00 to \$50.00; 7, \$50.00 to \$100.00; 9, \$100.00 to \$150.00; 1, \$150.00 to \$200.00; 6, \$200.00 to \$300.00; 3, over \$300.00.

The average age of the tractors reported was 1.8 years. For 1920 56 reported expenses, the average being \$41.35. Tractors driven by hired men were most expensive. Two reported that they had junked their tractors.

The question, "Have you had any breakdowns?" was answered by 106 farmers, 72 reporting "yes," and 29, "no." Two of the 72 had lost much time by breakdowns, the remainder ranged from a few hours to several days.

Questions as to losses of time, crops, and money due to breakdowns were answered too indefinitely to be worthwhile. Only six gave definite figures. One said \$200.00; 1, \$100.00; 1, \$75.00; and 3, below \$25.00. Fifty-two out of 97 had their tractors out of commission when they needed them and 45 did not.

Thirty-eight answered the question, "How many days did you lose?" Most of them stated indefinite periods. One said sixty; 1, thirty; 9, ten to fifteen; and others shorter periods of time. Many gave indefinite answers.

According to 106 reports 42 tractors were driven by hired men, 13 of which were unprofitable; 34 by owners, 4 of which were unprofitable; 20 by sons of farmers, 6 of which were unprofitable; and 9 by everyone, three of which were unprofitable. One was driven by a daughter and was profitable.

Seventeen of the operators had had previous tractor experience. Ten of them were hired men. Apparently they were hired because of their experience, but five of these tractors were unprofitable.

Out of 101 tractor owners 58 answered that in their opinion average negro farm laborers cannot successfully operate tractors, and 43 believe that negroes can be trained to do so.

To the question, "Can you get increased yields from your tractor?" 92 replied, 73 said "yes;" 6, "no;" and 13, "doubtful." The balance replied that they "had not owned their tractor long enough to tell." Twenty-four

gave the percentage of increase of crops, ranging from 5 percent to 100 percent.

#### MISCELLANEOUS USES OF TRACTOR

Tractors were used for miscellaneous farm work as follows: 16 reported silo filling; 14, threshing; 24, wood sawing; 13, feed grinding; 5, cotton ginning; 21, road work; 11, pulling stumps; 19, terracing; 6, grinding lime; 5, logging; and 9, miscellaneous work, chiefly baling hay and cultivating orchards. Nine did custom work.

This survey was taken during the period of depression when the farmers were discouraged, prices were near the bottom, and the implement industry was in a very despondent mood. Several questionnaires were accompanied by letters from farmers stating that they thought tractors unprofitable because farming was unprofitable, and that conditions in their opinion were such that no machinery could be made to pay for itself under prevailing conditions. Such replies were included in this summary. It is believed that under normal conditions answers could have been more favorable.

According to this survey Alabama is in line with northern and mid-western states in percent of profitable and unprofitable **tractors**.

