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BEEF CALF PRODUCTION IN ALABAMA

Costs, Returns, and Improvements



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BEEF CALF PRODUCTION IN ALABAMA:
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by
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BEEF CALF PRODUCTION IN ALABAMA: COSTS,
RETURNS, AND IMPROVEMENTS*

by T. D. Nolen** and J. H. Yeager***

The production of beef calves is an important farm enterprise in Alabama. Cattle and calves ranked third as a source of farm cash receipts to Alabama farmers and accounted for 16.5 per cent of total cash farm receipts in 1961.¹

In Alabama, the number of brood cows two years old and over increased from 310,000 head in 1950 to 691,000 head in 1962. This represented an increase of 122.9 per cent for the 12-year period. Government control programs for agriculture, a declining farm labor supply, and technological advances in agronomy and animal science have given impetus to the rise of the beef cattle industry in Alabama.

Calves accounted for 40.7 per cent of the marketings of beef cattle from Alabama farms in 1962.² Few facts are available from

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¹Alabama Agricultural Statistics, Alabama Department of Agriculture and Industries cooperating with United States Department of Agriculture, Bulletin 11, 1962, p. 82.

²Farm Production, Disposition, and Income, by States 1961-1962, Statistical Reporting Service, United States Department of Agriculture, 1963.

studies that point out the relative importance of factors that effect profits in the production of beef calves in Alabama. Basic cost data are needed to determine the economic feasibility of producing beef calves.

This study was initiated as part of an overall study on the economic potential of beef cattle production and feeding in Alabama. The specific objectives of this phase of the overall project were as follows:

- (1) To determine the resources used in beef calf production and the investment required,
- (2) To determine the costs and returns involved,
- (3) To determine management practices used and their effect on costs and returns.

How the Study was Made

In drawing the sample of beef calf producers, the State was divided into three geographical areas: North Alabama, Central Alabama (Black Belt Area), and South Alabama, Figure 1. Counties with less than 10,000 head of beef cattle were excluded from the possibility of entering the sample. Counties included in the sample were as follows: North Alabama: Colbert, Madison, St. Clair, and Tuscaloosa; Central Alabama: Sumter, Marengo, and Montgomery; and South Alabama: Monroe, Butler, Houston, and Choctaw.

Names and addresses of producers were supplied by the county agricultural agent. A total of 114 usable records were obtained: 24 in North Alabama, 47 in Central Alabama, and 43 in South Alabama.

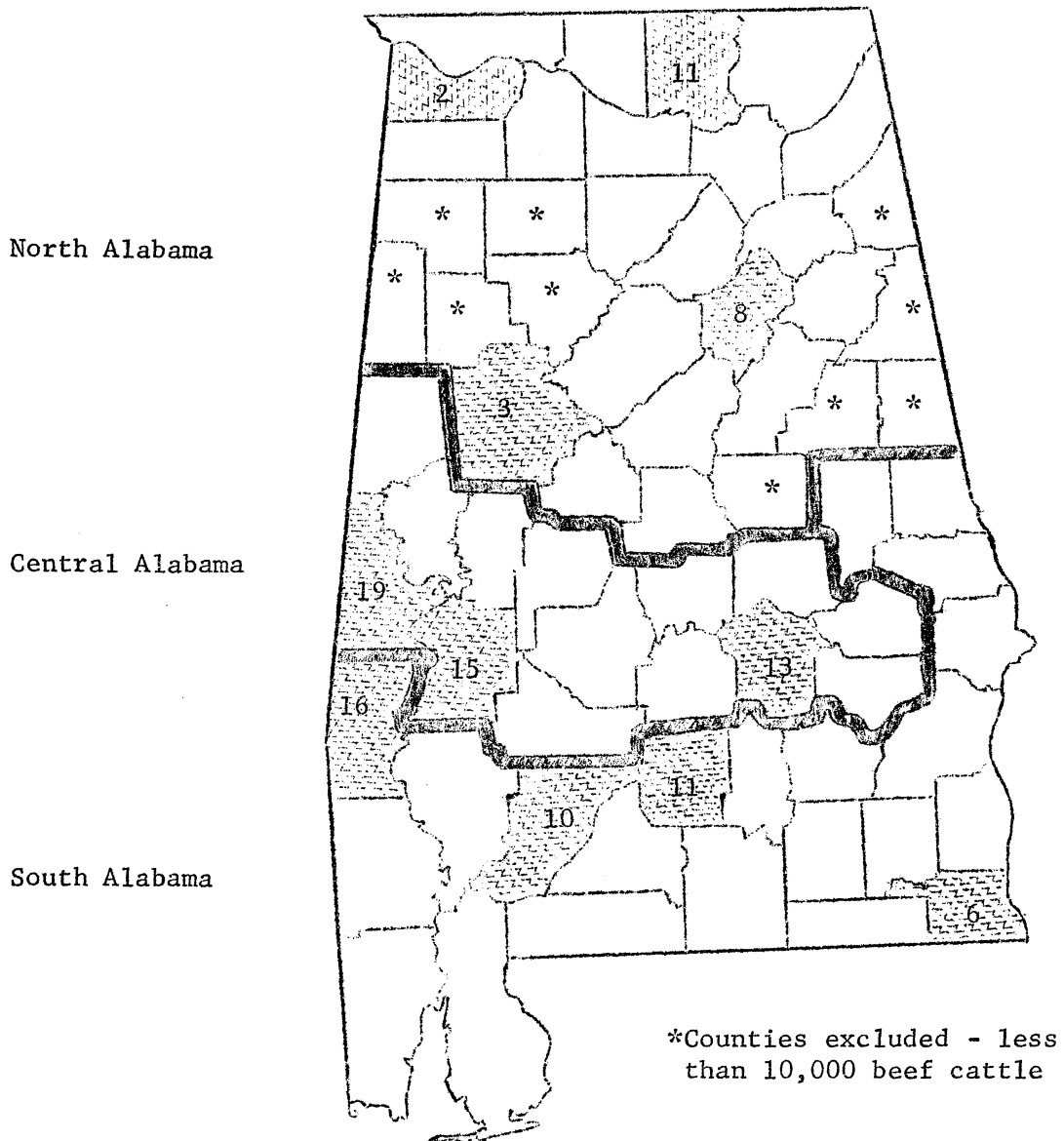


Fig. 1. Areas of the State and Counties Included in the Sample with the Number of Records Obtained in Each County.

Basic physical inputs and outputs data were obtained by personal interviews with beef calf producers. Since many cattlemen did not keep records of physical inputs used in beef calf production, estimates were necessitated.

For a description of method and procedure used in calculating costs, see Appendix A.

Several factors may have influenced the results of this study. The year 1962, for which physical input data were obtained, included a severe winter. Several of the sample counties were declared disaster areas by the Secretary of Agriculture and emergency feed grains were made available to certain farmers. This may have resulted in unusually large quantities of grain being fed to the beef herd.

Although lists of beef cattle producers were supplied by the county agricultural agent, consideration was given to the ability of the producer to answer the prepared questions. Thus, the sample of cattlemen was not a purely random one.

CENTRAL ALABAMA PRODUCERS

The Central Alabama Area, as used in this study, consisted of 14 counties in the central part of the State. It is commonly referred to as the "Black Belt" farming area.

Black Belt soils range from lime to extremely acid soils. Interspersed throughout the area are large acreages of sandy soils. Nearly all soils in the area are naturally adapted to growing various legumes and grasses for use as pasture and hay production.³

³Ben T. Lanham, Jr. *et al.*, Alabama Agriculture, Its Characteristics and Farming Areas, Alabama Agricultural Experiment Station Bulletin, No. 286, May 1953, pp. 106-107.

The area (14 counties) had 23,774 farms in 1959 with an average size of 193 acres per farm. The farms in the area had an average of 118 acres of pasture per farm. Woodland pasture per farm was 41 per cent of the acreage in pastures.⁴ Thus with most of the farmland in pasture, livestock was a major enterprise on a majority of the farms.

Description of Farms

The Central Alabama Area sample consisted of 47 beef calf producers with an average of 23 years experience in beef cattle production. The average age of the producers was 53 years. About 38 per cent of the producers reported farming as the only source of income.

The 47 sample producers operated an average of 1,033 acres of farmland in 1962. About 40 per cent of the producers reported renting from others an average of 473 acres. Five producers rented land to other farmers. One producer rented all of the farmland operated.

Thirty-five per cent of the producers reported an average of 41 acres of cotton with a range of 4 to 145 acres. Thirty-five per cent of the producers reported an average of 47 acres of corn with a range of 5 to 150 acres. About 94 per cent of the producers reported an average of 363 acres of woodland. Two producers reported a commercial dairy with 100 and 105 mature milk cows, respectively.

The beef producers had an average of 141 beef brood cows. The range in the size of herds was from 15 to 674 cows.

⁴United States Census of Agriculture, 1959, Alabama - Statistics for Counties, Vol. 1, Part 32, Bureau of the Census, United States Department of Commerce, Washington, D. C., County Table 1, pp. 130-135.

Level of Costs

Pasture and feed costs accounted for 67.8 per cent of the total cost per cow, Table 1. Fencing and building costs were \$8.08 per cow and labor was \$4.22 per cow. Interest on investment in beef cattle was \$11.05 per cow. Other costs, marketing, feed processing, health, commission and insurance, water, and property tax accounted for only \$6.46 or 7 per cent of the total costs per cow. When the total costs for each farm were adjusted for breeding stock sales, inventory change and purchases of cattle, the average net cost per cow was \$86.38 for the sample.

The cost per hundredweight of beef sold, excluding a land charge, was \$26.63 for the sample farms. Total net cost was divided by total pounds marketed to determine cost per hundredweight sold.

Input comparisons. Variations in amount and kind of inputs accounted for the difference between the low and middle cost groups while variations in inputs and outputs accounted for the difference in cost between the low and high cost groups.

The difference in pasture costs per cow between the low and middle cost groups accounted for 68 per cent of the difference in the total cost per cow. Between the low and high cost group, pasture costs differences accounted for 64 per cent of the overall difference in total costs per cow.

Feed costs per cow, harvested forage, grain, protein, and miscellaneous feed, accounted for 16 per cent of the difference between the low and middle cost groups and 31 per cent of the difference between the low and high cost groups. Pasture and feed cost per cow accounted for

Table 1. Itemized Costs per Brood Cow as Reported by 47 Producers of Beef Calves, Central Alabama, 1962

Item	Cost group			Average all groups
	Less than \$25.00 per cwt.	\$25.00 to \$34.99 per cwt.	\$35.00 per cwt. and over	
Number of farms	17	19	11	47
Average no. brood cows	165	124	132	141
Acres used for beef per farm	648	613	657	636
Cost per cow:				
Pasture	\$20.37	\$ 42.72	\$ 46.35	\$34.04
Harvested forage ^a	10.06	12.74	12.18	11.48
Grain	4.40	8.81	16.57	8.64
Protein	8.49	6.85	6.94	7.56
Miscellaneous feed	1.07	.88	.91	.96
Marketing	2.10	2.68	1.92	2.27
Buildings	2.61	3.67	3.27	3.13
Fencing	4.25	4.64	6.81	4.95
Health	.94	1.46	.74	1.08
Commission and insurance	.11	.03	. .	.06
Water	.50	.69	.36	.54
Property tax	1.34	1.68	1.70	1.54
Labor	3.51	4.98	4.36	4.22
Interest on beef animal investment	11.26	11.66	9.63	11.05
Feed processing	.87	1.25	.73	.97
Subtotal ^b	\$71.88	\$104.74	\$112.47	\$92.49
Less breeding stock sales, and change in inventory	22.98	11.13	23.58	18.89
Plus purchases ^c	15.44	13.15	7.01	12.78
Adjusted total costs ^b	\$64.34	\$106.76	\$ 95.90	\$86.38
Pounds of beef marketed per cow	364	365	182	324
Cost per cwt. of beef sold	\$17.70	\$ 29.24	\$52.63	\$26.63

^aIncludes purchased hay.

^bExcludes land charge.

^cPrimarily breeding stock.

84 and 95 per cent of the differences between the low and middle and low and high cost groups, respectively.

The distribution between primarily native pastures and other grasses indicated strong reliance on native plants in Central Alabama, Table 2. Almost 94 per cent of the pasture land in the low cost group was composed of native or native grasses and clovers.⁵ The low cost producers used less temporary crops for hay and pasture, less acres per cow and had a significantly lower fertilizer cost per acre. The higher pasture cost per cow for the middle and high cost group was attributed to lower stocking rate per acre, higher fertilizer cost per acre, and more expensive pasture crops.

Amounts of corn, hay and crude protein fed per cow by groups are shown in Table 3. The \$5.26 difference in feed cost per cow between the low and the middle cost groups was primarily the result of feeding larger amounts of grain per cow. Between the low and high cost groups, grain cost per cow accounted for \$12.17 of the \$12.58 difference in feed cost per cow. Corn was the major grain fed.

Labor cost per cow accounted for the third largest difference between the low and middle cost groups. The low cost producers reported an average of 7.1 hours of hired labor per cow while the middle cost producers reported 10.4 hours per cow. Buying and selling labor accounted for only \$0.30 of the labor cost per cow for both groups. The high cost producers reported an average of 8.9 hours of hired labor per cow.

⁵Dallisgrass was considered a native grass in the Central Alabama area. Native grasses, as used in this study included those that have to be established yet tend to persist and do not have to be re-established.

Table 2. Pasture and Hay Crops Used in Producing Beef Calves, 47 Producers, Central Alabama, 1962

Item	Unit	Cost group			Average all groups
		Low	Middle	High	
Producers	No.	17	19	11	47
Proportion of land for beef:					
Native grasses and native grasses plus clover	Pct.	93.9	85.7	78.1	86.5
Other crops ^a	Pct.	6.1	14.3	21.9	13.5
Land double cropped, hay and grazing or grazing and seed	Pct.	7.0	9.1	13.1	9.4
Pasture per cow	Acre	3.7	4.8	5.0	4.4
Land charged to beef per cow	Acre	3.9	4.9	5.0	4.5
Temporary crops per cow	Acre	.12	.39	.29	.25
Pasture cost per cow	Dol.	20.37	42.72	46.35	34.04

^aOther crops include johnsongrass, fescue, bahia, Coastal bermuda-grass, Caley peas, oats, rye, ryegrass, grain sorghum, millets and combinations of these.

Table 3. Feeds Fed per Cow by 47 Beef Calf Producers, Central Alabama, 1962^a

Item	Unit	Cost group			Average all groups
		Low	Middle	High	
Producers	No.	17	19	11	47
Feed:					
Corn	Bu.	2.7	4.9	10.6	5.2
Hay	Lb.	1,340	1,880	1,595	1,584
Crude protein ^b	Lb.	63.4	54.6	79.0	63.7
Feed cost ^c	Dol.	24.02	29.28	36.60	28.64

^aAmounts fed are averages for the total fed by the group.

^bIncludes crude protein from oil meals and range pellets only.

^cFeed cost includes the cost of salt, minerals, cobs and shucks, and cottonseed hulls fed per cow.

No significant relationship ($r = -.288$) was found between size of herd and hours of labor per cow. This may have resulted from the fact that producers estimated the time required in connection with the cattle enterprise. No records on hours used to feed and handle the cow herds were kept by producers.

Fencing cost differences were greatest between the low and high cost groups. This was due primarily to the difference in the amount of fenced woodland per cow, 3.8 acres versus 1.7 acres for the high and low cost groups, respectively. The low and middle cost groups had a difference of \$0.39 in fencing cost per cow.

Interest on investment in beef cattle was highest in the middle cost group and lowest in the high cost group. The major reason for this difference was in inventory values of raised calves, Table 4. The low cost producers valued their breeding stock at a higher value per head than either of the other groups.

Output comparisons. The low and middle cost groups sold almost the same amount of beef per cow, 364 pounds for the low cost group compared to 365 pounds for the middle cost group. The high cost group had the lowest sales of beef per cow, 182 pounds, Table 5.

The difference in production per cow was the main reason for the high cost per pound of beef in the high cost group. Net costs per cow were lower for the high cost group than with the middle cost group. However, the production of beef sold per cow was twice as great in the middle cost group. This accounted for the lower cost per hundredweight of beef sold for the middle cost group.

Table 4. Average Beef Cattle Inventory of 47 Beef Calf Producers, Central Alabama, 1962

Item	Cost group									Average all groups		
	Low			Middle			High			Value		
	No.	Value		No.	Value		No.	Value		No.	Per head	Per farm
	Per head	Per farm		Per head	Per farm		Per head	Per farm		Per head	Per farm	
Farms	17			19			11			47		
Cattle per farm:												
Cows	165	\$165	\$27,225	124	\$150	\$18,600	132	\$135	\$17,820	141	\$153	\$21,573
Bulls	6	360	2,160	5	345	1,725	5	330	1,650	6	347	2,082
Replacements	10	125	1,250	14	125	1,750	20	110	2,200	14	116	1,624
Raised calves	88	70	6,160	65	105	6,825	53	70	3,710	72	87	6,264
Total investment			\$36,795			\$28,900			\$25,380			\$31,543
Interest rate			.05			.05			.05			.05
Interest on herd investment			\$1,839.75			\$1,445.00			\$1,269.00			\$1,577.15
Interest per cow per year ^a			11.15			11.65			9.61			11.19

^aInterest as calculated here differs slightly from that in Table 1 as a result of the procedure used.

Table 5. Comparison of Selected Output Factors, 47 Beef Calf Producers, Central Alabama

Factor	Unit	Cost group			Average all groups
		Low	Middle	High	
Calves born per cow	No.	.89	.88	.65	.83
Calf sales as proportion of brood cows	Pct.	79.8	78.9	42.8	71.4
Calf sales as proportion of calves born	Pct.	90.1	89.2	66.3	85.7
Average weight of calf sold	Lb.	455	463	426	454
Average age of calf sold	Mo.	8.0	8.0	8.4	8.0
Amount of beef sold per cow	Lb.	364	365	182	324

The average high cost producer was increasing the number of animals available for breeding purposes more than the other two groups. Raised and purchased replacements per herd exceeded brood cow sales and death losses by an average of 13.2 animals. The average high cost producer raised 84 per cent of the replacements. The average middle and low cost producers increased the number of cows and replacements by 4.8 and 9.2 females respectively during the year. Raised replacements were 70 per cent of total replacements for the middle and 46 per cent for the low cost group.

Net Returns

Excluding a charge for land, 14 low cost producers, one middle cost producer, and none of the high cost producers had a positive net return to land and management. The middle cost producer who received a positive return for land and management reported selling his beef calves at an average price of \$27.50 per hundredweight. Only two low cost

producers had a positive net return to management after land was charged at 5 per cent of its fair market value.

When cash expenses were defined to include fertilizer, feed costs other than pasture, purchases of cattle, veterinary and medical, marketing and property tax, the net return above cash expenses was \$76.51 per brood cow for the low cost producers and \$36.97 per brood cow for the middle cost producers, Table 6. The high cost producers, as an average, had a loss of \$2.16 per brood cow with cash expenses considered. The average low cost producer was the only one with a net return above all expenses, excluding a land charge.

Land Charge

From July 1962 to July 1963, farmland in Alabama increased in value an average of 7 per cent.⁶ With land appreciating in value, it was felt that beef calf producers should not be charged an interest cost for land.

Based on the estimates from beef producers, the market value of land used for beef ranged from \$40 to \$1,500 per acre. Location was one of the major factors that contributed to high acre values in most cases. Generally, the closer the farm to a city, the higher the land value.

With a land charge computed at 5 per cent of the estimated present market value, the range in land charge per hundredweight of market beef sold was as follows:

⁶Farm Real Estate Market Developments, Economic Research Service, United States Department of Agriculture, August, 1963, p. 34.

Table 6. Net Return per Farm as Reported by 47 Producers of Beef Calves, Central Alabama, 1962

Item	Cost group		
	Less than \$25.00 per cwt.	\$25.00 to \$34.99 per cwt.	\$35.00 per cwt. and over
Number of farms	17	19	11
Average number of brood cows	165	124	132
Acres used for beef per farm	648	613	657
Market beef sold per farm, cwt.	599.6	452.9	239.9
Price received per cwt. for market beef	\$ 23.17	\$ 23.93	\$ 21.68
Average cost per cwt. of market beef sold	\$ 17.70	\$ 29.24	\$ 52.63
Cash receipts per farm:			
Market beef sales	\$13,891.41	\$10,839.79	\$ 5,165.55
Breeding stock sales	1,550.06	2,007.73	1,000.91
Inventory change	2,417.35	-626.58	2,103.18
Total credits per farm	\$17,858.82	\$12,220.94	\$ 8,269.64
Expenses per farm:			
Cash expenses ^a	\$ 5,235.01	\$ 6,631.00	\$ 7,632.45
Noncash expenses	6,621.87	6,361.89	7,172.79
Purchases	2,546.29	1,632.11	922.72
Total expenses per farm (excludes land charge)	\$14,403.17	\$14,625.00	\$15,727.96
Net return above cash expenses per farm	\$12,623.81	\$ 4,584.41	\$ -285.53
Net return above cash expenses per brood cow	76.51	36.97	-2.16
Net return above cash expenses per cwt. of market beef sold	21.05	10.12	-1.08
Net return above total expenses per farm	\$ 3,455.65	\$-2,404.06	\$-7,458.32
Net return above total expenses per brood cow	20.94	-19.39	-56.50
Net return above total expenses per cwt. of market beef sold	5.76	-5.31	-31.09

^aDoes not include cash expenses for tractor and machinery use, buildings, fences, and budgeted pasture costs.

<u>Cost group</u>	<u>Land charge per hundredweight</u>
Low	\$3.60 - \$43.10
Middle	4.40 - 20.80
High	2.10 - 31.20

Break-Even Point

The break-even point in beef calf production is where net cost per cow equals total receipts per cow. Point A in Figure 2 represents the break-even point for the low cost group in Central Alabama when the price received for beef calves was \$23 per hundredweight.

The slope of the revenue line is determined by the ratio of per unit change in revenue to per unit change in output. All sales made above \$63 per cow gave a profit for the low cost producers and all sales below this were made at a loss. The percentage that profits were of sales increased as sales increased beyond \$63 per cow.

If we assume that the same relationship existed on the sales and expense lines beyond \$63, the percentage of profit to sales would become larger as volume continued to increase. This type of relationship provides a foundation for the idea that increased volume of production per cow is the key to increasing profits.

Figure 3 illustrates the effect that varying prices received and output per cow have on the break-even point. As output and price received increase, the amount of profit increases. As costs per cow decline, the break-even point moves downward to the left as illustrated by A' to A and B' to B.

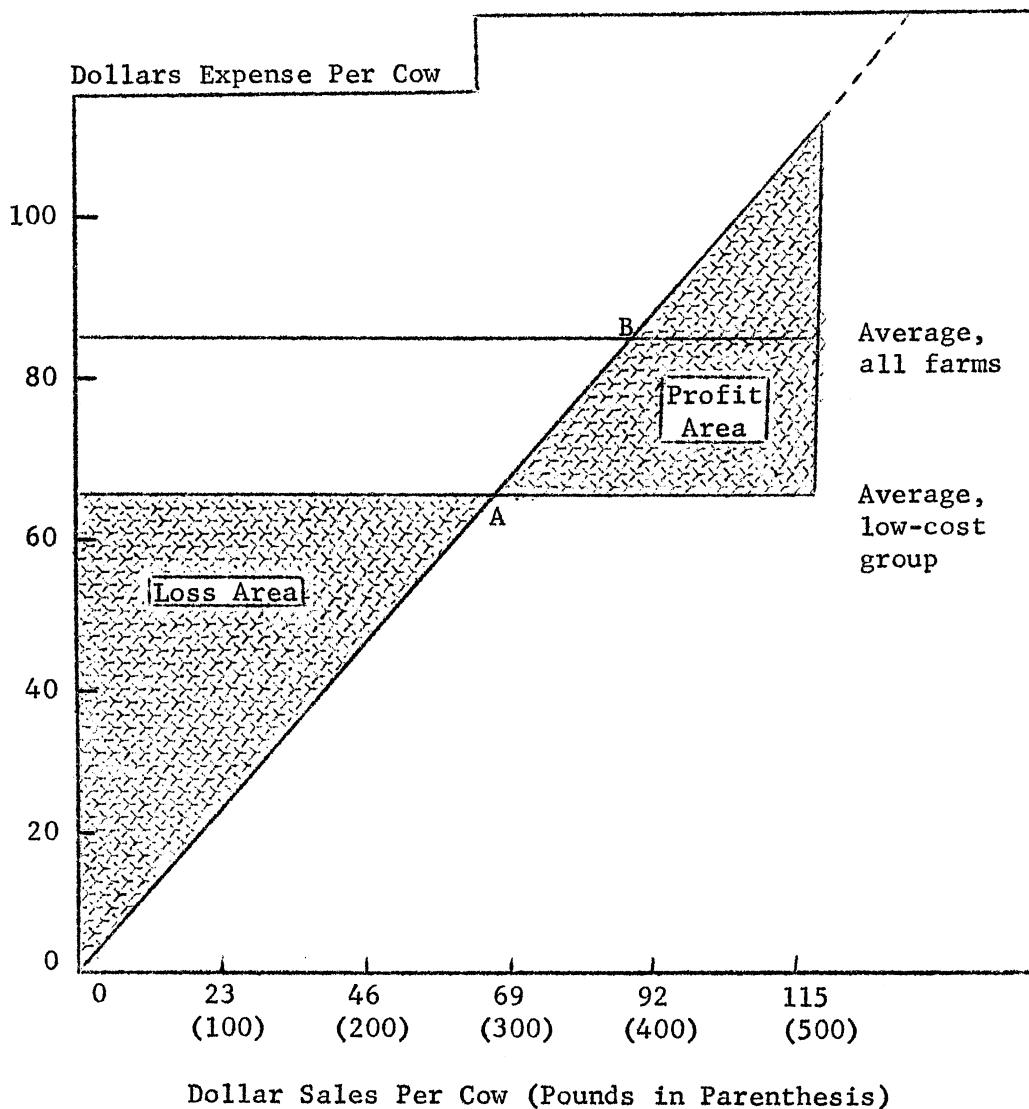


Fig. 2. Relationship of Varying Dollar Sales and Costs Per Cow to the Break-even Point in Producing Beef Calves, 47 Producers, Central Alabama, 1962.

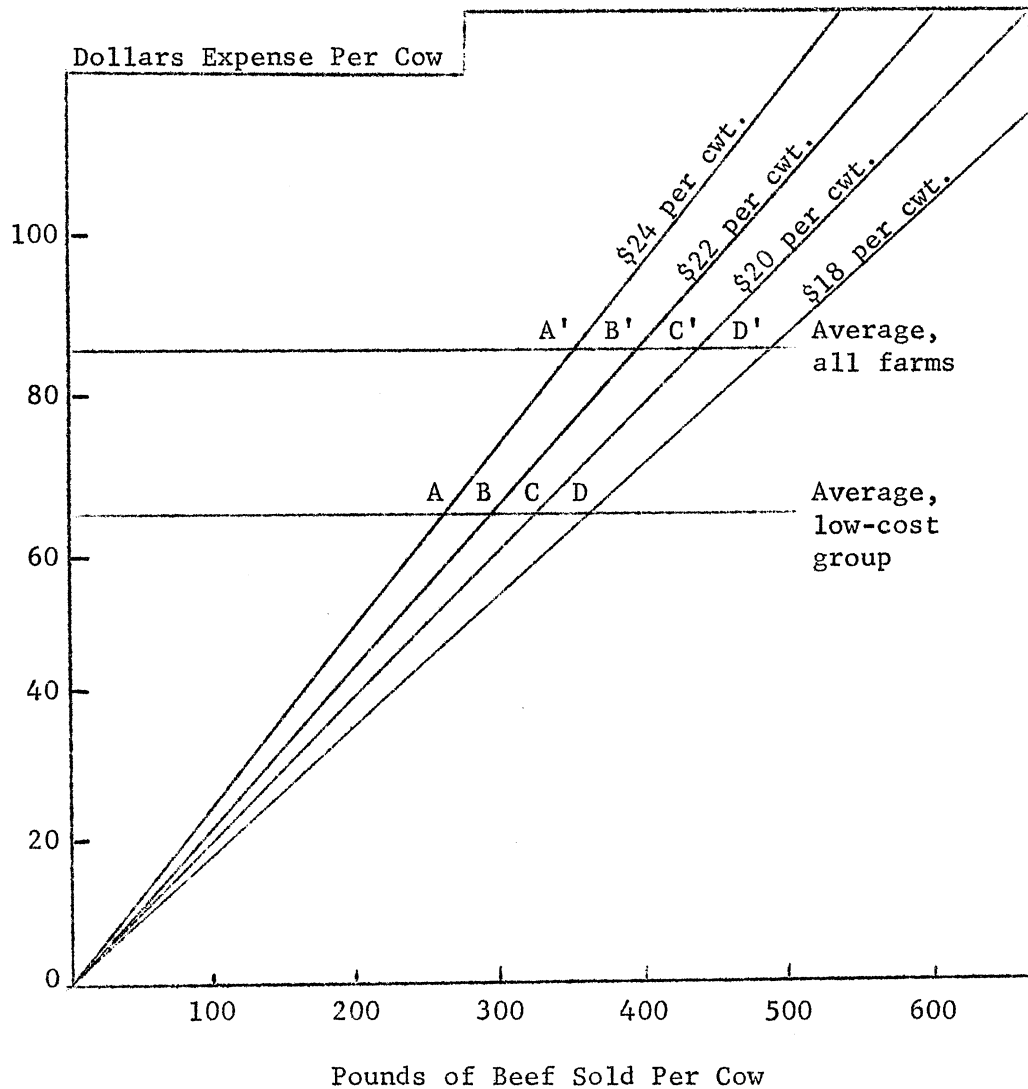


Fig. 3 Effect of Varying Prices Received and Production Per Cow on the Break-even Point in Producing Beef Calves, 47 Producers, Central Alabama, 1962.

NORTH ALABAMA PRODUCERS

The North Alabama Area consisted of 21 counties. The area includes a portion of three broad farming areas, the Upper Coastal Plains, the Limestone Valleys, and the Appalachian Plateau. The Limestone or Tennessee Valley soils are above average in inherent fertility. Cotton, corn, and hay crops together occupy the majority of the harvested crop acreage in the Limestone and Tennessee Valley parts of North Alabama.⁷

The Appalachian Plateau is commonly known as the Sand Mountain Area. Nearly all soils of the area are responsive to fertilizers and good management practices. Cotton is the major cash crop. Except for hogs and poultry, livestock is kept largely for home use.

Soil types in the Upper Coastal Plains vary with most productive land generally being in the river terraces and flood plains. Cotton and corn occupy a majority of the harvested cropland.⁸

The area included as North Alabama had 45,436 farms in 1959 with an average size of 104 acres per farm. The farms in the area had an average of 31 acres of pasture per farm. Woodland pastured was 38 per cent of the land pastured.⁹

Description of Farms

The North Alabama sample of farms consisted of 26 beef calf producers with an average of 18 years experience in beef cattle production.

⁷Ben T. Lanham, Jr., et al., Alabama Agriculture, Its Characteristics and Farming Areas, Alabama Agricultural Experiment Station, Bulletin No. 286, May, 1953, p. 102.

⁸Ibid.

⁹United States Census of Agriculture, 1959, Alabama - Statistics for Counties, Vol. 1, Part 32, Bureau of the Census, U. S. Department of Commerce, Washington, D. C., County Table 1, pp. 130-135.

The average age of the producers was 49 years. Farming was the only source of income for 46 per cent of the producers.

The 26 beef calf producers operated an average of 883 acres of farmland. Fifty per cent of the producers reported renting an average of 364 acres from others. Two producers rented land to farmers. An average of 270 acres of land was charged to beef by the 26 producers. This was land that provided the pasture, hay and forage crops for support of the beef enterprise.

Corn and cotton were the most prevalent row crops. Seventeen producers reported raising an average of 81 acres of corn. Fifteen producers reported growing an average of 193 acres of cotton. Five producers reported growing soybeans.

An average of 105 market hogs were produced by 11 farmers in the sample. One producer reported a 150-cow dairy. One layer flock of 1,000 birds was reported.

The beef producers had an average of 63 beef brood cows. The range in size of herds was from 17 to 182 cows.¹⁰

Level of Costs

Pasture was the major cost and averaged \$48.47 per cow for all producers, Table 7. Pasture and feed costs accounted for about 67 per cent of the unadjusted cost per cow. Interest on investment in cattle was \$12.23 per cow. Labor cost per cow was \$8.18. Other costs accounted for 16 per cent of the unadjusted cost per cow with buildings being the

¹⁰The sample consisted of 26 farms, however, 2 farmers had 300 and 350 cows and were eliminated from the analysis since they had over 29 per cent of the total cows involved.

Table 7. Itemized Costs per Brood Cow Reported by 24 Producers of Beef Calves, North Alabama, 1962

Item	Cost group			Average all groups
	Less than \$25.00 per cwt.	\$25.00 to \$34.99 per cwt.	\$35.00 per cwt. and over	
Number of farms	5	5	14	24
Average no. brood cows	51	44	75	67
Acres used for beef per farm	170	150	287	234
Cost per cow:				
Pasture	\$36.53	\$ 45.17	\$ 52.09	\$ 48.47
Harvested forage ^a	8.96	19.44	22.48	19.76
Grain	6.66	17.19	10.60	10.88
Protein	6.32	6.36	4.62	5.15
Miscellaneous feed	.98	.43	1.90	1.53
Marketing	3.04	2.94	2.20	2.45
Buildings	4.57	5.14	11.10	9.14
Fencing	6.41	3.68	5.37	5.30
Health	1.21	1.38	2.21	1.92
Commission and insurance	. .	.09	.02	.03
Water	.23	.32	.44	.39
Property tax	1.12	1.17	1.31	1.26
Labor	5.86	7.11	8.98	8.18
Interest on beef animal investment	11.30	10.69	12.79	12.23
Feed processing	.06	.26	2.44	1.73
Subtotal ^b	\$93.25	\$121.38	\$138.55	\$128.42
Less breeding stock sales, and change in inventory	58.17	23.46	30.12	33.91
Plus purchases ^c	27.43	16.74	13.00	15.98
Adjusted total costs ^b	\$62.51	\$114.66	\$121.43	\$110.49
Pounds of beef marketed per cow	329	373	249	280
Cost per cwt. of beef sold ^b	\$18.99	\$ 30.76	\$ 48.76	\$ 39.41

^aIncludes purchased hay.

^bExcludes land charge.

^cPrimarily breeding stock.

largest item in this group. After crediting breeding stock sales and inventory change and adding the cost of purchases, the net cost per cow was \$110.49 excluding a charge for land. The net cost per hundredweight of market beef sold was \$39.41, excluding a charge for land.

Input comparisons. The average cost per hundredweight of market beef sold was \$18.99, \$30.76 and \$48.76 for the low, middle, and high cost groups, respectively. Variations in the amount and kind of inputs and variations in output accounted for the differences between the groups. The net cost per cow was \$62.51, \$114.66 and \$121.43 for the low, middle, and high cost groups, respectively.

Feed cost per cow accounted for the major difference between the low and middle cost groups, Table 8. Amounts of grain fed per cow accounted for over half the difference in feed costs; harvested forage cost accounted for the remaining difference in feed cost. The reason for the high harvested forage cost was that over 60 per cent of the hay fed by the middle cost producers was purchased.

The difference in pasture cost per cow between low and middle cost groups was due to different types of pastures and the associated budgeted cost per acre, Table 9. The budget cost per acre for the low cost producers was lower as a result of using less expensive grasses and double cropping. Fertilizer cost per acre was approximately the same for the middle and low cost groups.

Feed cost per cow accounted for about a third of the difference in gross cost per cow between the low and high cost groups. More hay and grain were fed by the high cost group while the low cost group fed more

Table 8. Average Amount of Feeds Fed Per Cow by 24 Beef Calf Producers, North Alabama, 1962^a

Item	Unit	Cost group			Average all groups
		Low	Middle	High	
Producers	No.	5	5	14	24
Feed:					
Corn	Bu.	5.0	12.2	8.3	8.3
Hay	Lb.	1,200	1,680	2,420	2,100
Crude protein ^b	Lb.	65.2	63.1	47.4	52.7
Feed cost ^c	Dol.	22.92	43.42	39.60	37.32

^aAmounts fed are averages for the total fed by the group.

^bIncludes protein from oil meals and range pellets only.

^cFeed cost includes the cost of salt, minerals, cobs and shucks, hulls, and other grains fed per cow.

protein. The lower protein cost for the high cost producers was not sufficient to offset the higher harvested forage and grain cost.

Pasture cost was \$15.56 more per cow in the high cost group than in the low cost group. The high cost group had a higher fertilizer cost per acre which accounted for over 50 per cent of the difference in pasture cost. (The difference in fertilizer cost per acre between the low and high cost group was not statistically significant, $t = 1.777$ with 17 d.f.)

The amount of fenced woodland accounted for the differences in fencing cost. Woodland fenced for beef was highest in the low cost group, 4.8 acres as compared to .4 and 2.8 acres in the middle and high cost groups, respectively.

The hours of labor used for feeding and handling the beef herd were highest in the high cost group. The average hours of labor per cow

Table 9. Kinds of Pasture and Hay Used in Producing Beef Calves, 24 Producers, North Alabama, 1962

Item	Unit	Cost group			Average all groups
		Low	Middle	High	
Producers	No.	5	5	14	24
Proportion of land for beef:					
Native grasses	Pct.	17.3	5.6	37.7	30.2
Fescue and fescue with combinations	Pct.	27.9	24.2	26.9	26.3
Temporary	Pct.	9.9	17.7	20.5	18.4
Other crops	Pct.	44.9	52.5	14.9	25.1
Land double cropped, hay and grazing or grazing and seed	Pct.	24.5	8.8	7.2	9.7
Pasture per cow	Acre	2.9	3.0	3.3	3.2
Land charged to beef per cow	Acre	3.3	3.4	3.8	3.7
Temporary crops per cow ^a	Acre	.31	.61	.91	.71
Pasture cost per cow	Dol.	36.53	45.17	52.09	48.47

^aIncludes silage crops raised by two producers.

were 10.8, 13.2 and 17.2 for the low, middle and high cost groups, respectively. There was no significant correlation ($r = -.200$) between the hours of labor per cow and the size of herd. Labor cost per cow including buying and selling labor was \$5.86, \$7.11 and \$8.98 for the low, middle and high cost groups, respectively.

The high cost producers placed a higher value per head on their cattle than the other two groups, Table 10. The interest per cow on beef animal investment was \$12.79 for the high cost group as compared to \$11.30 and \$10.69 for the low and middle cost groups, respectively.

Output comparisons. The middle cost group sold the most pounds of beef per cow, Table 11. However, the low cost producers, as an average,

Table 10. Average Beef Cattle Inventory of 24 Beef Calf Producers, North Alabama, 1962

Item	Cost group									Average		
	Low			Middle			High			all groups		
	No.	Value		No.	Value		No.	Value		No.	Value	
		Per head	Per farm		Per head	Per farm		Per head	Per farm		Per head	Per farm
Farms	5			5			14			24		
Cattle per farm:												
Cows	51	\$143	\$ 7,293	44	\$141	\$ 6,204	75	\$185	\$13,875	63	\$172	\$10,836
Bulls	2	363	726	2	281	562	3	389	1,167	2	363	726
Replacements	10	120	1,200	2	93	186	9	130	1,170	8	125	1,000
Raised calves	32	71	2,272	40	62	2,480	40	73	2,920	38	70	2,660
Total investment			\$11,491			\$ 9,432			\$19,132			\$15,222
Interest rate			.05			.05			.05			.05
Interest on herd investment			\$574.55			\$471.60			\$956.60			\$761.10
Interest per cow per year ^a			\$ 11.27			\$ 10.72			\$ 12.75			\$ 12.08

^aInterest as calculated here differs slightly from that in Table 7 as a result of the procedure used.

Table 11. Comparison of Selected Output Factors for 24 Beef Calf Producers, North Alabama, 1962

Factor	Unit	Cost group			Average all groups
		Low	Middle	High	
Calves born per cow	No.	1.00	.93	.78	.84
Calf sales as proportion of brood cows	Pct.	64.4	78.4	53.9	59.2
Calf sales as proportion of calves born	Pct.	64.6	84.7	68.9	70.5
Average weight of calf sold	Lb.	510	475	462	473
Average age of calf sold	Mo.	8.5	8.6	8.3	8.4
Amount of beef sold per cow	Lb.	329	373	249	280

sold the heaviest calves, an average of 510 pounds per calf compared to 475 pounds for the middle cost producers. Low-cost producers had more calves born per cow. The high cost producers had the lowest sales per cow, sold the lightest calves, and had the smallest calf crop or number of calves born per brood cow.

The low cost producers sold a lower percentage of calves born because of two main factors: (1) they held more raised replacements, and (2) they had higher death losses. The low cost producers had an average inventory of 10 replacements for 51 brood cows; whereas, the middle cost producers had 2 replacements for 44 brood cows. Assuming the same ratio of purchases to increase in inventory as in the middle cost group, the low cost producers had a credit of \$19.73 more per cow than the middle cost producers. The increase in inventory was partially attributed to an increase in the number of replacements and raised calves along with an increase in their value. The high cost producers had an

increase in inventory of \$18.22 more per cow than the middle cost producers using the same assumption.

Calf death losses were highest in the high cost group, 3.9 per cent of the calves born. The low and middle cost group had calf death losses of 2.3 and 1.5 per cent, respectively.

Net Returns

Four of the five low cost producers had a positive net return to land and management. None of the middle and high cost producers had a positive net return to land and management in 1962. One producer had a positive net return to management with a land charge calculated at 5 per cent of the estimated present market value as reported by the producers. As an average, all producers covered cash expenses, Table 12.

If value is an indication of quality, the high cost producers were producing the highest quality calves of all three groups. The average value of a brood cow was \$185 per head for the high cost group and \$143 and \$141 in the low and middle cost groups. The average price received for beef calves sold was \$25.44 per hundredweight in the high cost group compared to \$21.24 and \$21.20 in the low and middle cost groups.

Land Charge

The land charge per hundredweight of market beef sold, computed at 5 per cent of the estimated present market value, was as follows:

<u>Cost groups</u>	<u>Land charge per hundredweight</u>
Low	\$3.80 - \$31.20
Middle	3.10 - 13.90
High	4.60 - 45.60

Table 12. Net Return per Farm as Reported by 24 Producers of Beef Calves, North Alabama, 1962

Item	Cost group		
	Less than \$25.00 per cwt.	\$25.00 to \$34.99 per cwt.	\$35.00 per cwt. and over
Number of farms	5	5	14
Average number of brood cows	51	44	75
Acres used for beef per farm	170	150	287
Market beef sold per farm, cwt.	169.2	162.6	185.7
Price received per cwt. of market beef sold	\$ 21.24	\$ 21.20	\$ 25.24
Average cost per cwt. of market beef sold	18.99	30.76	48.76
Cash receipts per farm:			
Market beef sales	\$3,594.60	\$ 3,446.00	\$ 4,725.00
Breeding stock sales	945.00	595.00	794.86
Inventory change	2,045.00	428.00	1,451.07
Total credits per farm	\$6,584.60	\$ 4,469.00	\$ 6,970.93
Expenses per farm:			
Cash expenses ^a	\$2,234.75	\$ 2,916.90	\$ 5,025.24
Noncash expenses	2,558.11	2,375.28	5,306.53
Purchases	1,410.00	730.00	969.64
Total expenses per farm (excludes land charge)	\$6,202.86	\$ 6,022.18	\$11,301.41
Net return above cash expenses per farm	\$2,939.85	\$ 822.10	\$ 976.05
Net return above cash expenses per brood cow	57.64	18.68	13.01
Net return above cash expenses per cwt. of market beef sold	17.38	5.06	5.26
Net return above total expenses per farm	\$ 381.74	\$-1,553.18	\$-4,330.48
Net return above total expenses per brood cow	7.49	-35.30	-57.74
Net return above total expenses per cwt. of market beef sold	2.26	-9.55	-23.32

^aDoes not include cash expenses for tractor and machinery use, buildings, fences, and budgeted pasture costs.

The estimated present market value of land used for beef production ranged from \$50 to \$500 per acre. Eighty-three per cent of the producers stated that land used for beef production had doubled or more than doubled in value since purchase. Location of farms influenced the value of the land. Farms located in populous areas or rapidly growing areas tended to have higher land values.

SOUTH ALABAMA PRODUCERS

The South Alabama Area consisted of the Lower Coastal Plains section of the State. The soils of the area were formed by marine deposits. These deposits weathered to form the soils that are now present. Most of the soils are gray to red sandy loams or loamy sands. Production of peanuts, corn, cotton, and hogs constitute the major farming enterprises, except in the Gulf Coast Area where potatoes, soybeans, corn, dairying, poultry, and hogs are important enterprises. Production of timber products and extensive grazing are important, particularly in southwestern Alabama.¹¹

The area (22 counties) had 34,802 farms with an average of 168 acres per farm in 1960. The farms, as an average, had 70 acres of pastured land. Woodland pastured was 60 per cent of the total pastured land.¹²

¹¹Ben T. Lanham, Jr., et al., Alabama Agriculture, Its Characteristics and Farming Areas, Alabama Agricultural Experiment Station, Bulletin No. 286, May 1953, p. 14.

¹²United States Census of Agriculture, 1959, Alabama - Statistics for Counties, Vol. 1, Part 32, Bureau of the Census, U. S. Department of Commerce, Washington, D. C., County Table 1, pp. 130-135.

Description of Farms

The South Alabama sample consisted of 43 beef calf producers with an average of 19 years experience in beef cattle production. The average age of the producers was 49. Twenty-three per cent of the farmers in the sample reported farming as the only source of income. Forty-one of the producers owned an average of 668 acres per farm. Another producer rented all the farmland operated, while another producer owned 50,000 acres. About 37 per cent of the producers rented an average of 280 acres from other landowners. Six producers reported renting an average of 152 acres to other farmers. The average size farm operated was 737 acres with 236 acres used for beef.

Cotton and corn were the crops raised most frequently. Eighteen producers reported an average of 47 acres of cotton and 26 producers reported an average of 70 acres of corn. Six producers reported raising 134 acres of peanuts, as an average. Three producers raised an average of 80 acres of soybeans. Ten producers reported commercial hog enterprises.

The average size beef herd consisted of 72 brood cows, 3 bulls, 13 replacements and 38 calves. The range in size of herd was from 10 to 310 brood cows.

Level of Costs

The net cost per cow for the area was \$102.95, Table 13. Before credits for breeding stock sales and inventory change were considered, pasture cost accounted for 38.4 per cent of the cost per cow. Feed costs were 32.4 per cent of the cost per cow. Pasture and feed costs were 70.8 per cent of the costs per cow before adjustments. Buildings, fencing, and marketings were only 10 per cent of the costs per cow before

Table 13. Itemized Costs per Brood Cow as Reported by 43 Producers of Beef Calves, South Alabama, 1962

Item	Cost group			Average all groups
	Less than \$25.00 per cwt.	\$25.00 to \$34.99 per cwt.	\$35.00 per cwt. and over	
Number of farms	10	13	20	43
Average no. brood cows	88	79	56	72
Acres used for beef per farm	163	244	285	236
Cost per cow:				
Pasture	\$30.64	\$ 45.91	\$ 56.66	\$ 45.63
Harvested forage ^a	6.24	11.39	14.07	10.93
Grain	12.34	16.55	20.35	16.79
Protein	8.64	9.10	7.82	8.48
Miscellaneous feed	4.41	1.85	1.19	2.33
Marketing	3.37	3.29	2.38	2.97
Buildings	2.60	3.97	5.70	4.24
Fencing	3.07	4.17	6.86	4.88
Health	1.26	.99	1.96	1.43
Commission and insurance	. .	.90	. .	.30
Water	.29	.30	.63	.42
Property tax	.63	1.05	1.55	1.12
Labor	5.39	5.02	10.04	7.04
Interest on beef animal investment	10.78	12.16	10.13	11.00
Feed processing	.94	1.54	1.27	1.27
Subtotal ^b	\$90.60	\$118.19	\$140.61	\$118.83
Less breeding stock sales, and change in inventory	17.67	17.83	30.94	22.77
Plus purchases ^c	5.27	4.36	10.33	6.89
Adjusted total costs ^b	\$78.20	\$104.72	\$120.00	\$102.95
Pounds of beef marketed per cow	348	343	264	315
Cost per cwt. of beef sold ^b	\$22.45	\$ 30.50	\$ 45.39	\$ 32.70

^aIncludes purchased hay.

^bExcludes land charge.

^cPrimarily breeding stock.

adjustments. The average cost per hundredweight of beef sold was \$32.70 with pasture and feed costs accounting for \$26.74 of this total prior to adjustments for breeding stock sales and inventory changes.

Input comparisons. Variations in inputs per cow account for the major difference in cost between the low and middle cost groups. Variations in both output and inputs per cow account for the difference between the low and high cost groups. The cost per hundredweight of beef sold, excluding a charge for land, was \$22.45, \$30.50 and \$45.39 for the low, middle, and high cost groups, respectively.

Pasture cost per cow accounted for \$15.27 of the \$27.59 difference in total cost per cow between the low and middle cost producers. The low cost producers held pasture cost lower by using less expensive pastures and a heavier stocking rate, Table 14. Fertilizer cost per acre was approximately the same for all three groups. The low cost Wiregrass Area producers of the South Alabama sample had a more intensive farming pattern than the low cost producers from the South Central and Southwestern Coastal plains. The Wiregrass producers depended more on temporary crops but had a heavier stocking rate per acre to offset the higher cost of temporary crops.¹³

Pasture costs accounted for \$26.02 of the \$50.01 difference between the low and high cost producers. The high cost producers had a lower cost per acre based on budgets used for pastures but the lower stocking rate per acre tended to increase pasture costs per cow.

¹³Forty per cent of the low cost producers, none of the middle cost producers, and 10 per cent of the high cost producers were in the Wiregrass farming area.

Table 14. Major Kinds of Pasture Used, Stocking Rates and Related Factors for 43 Beef Calf Producers, South Alabama, 1962

Item	Unit	Cost group			Average all groups
		Low	Middle	High	
Producers	No.	10	13	20	43
Proportion of acreage:					
Bahia alone and bahia with combinations	Pct.	31.8	25.0	41.7	34.8
Native grasses and native grasses plus clover	Pct.	20.0	17.8	35.2	27.1
Temporary crops	Pct.	22.3	28.3	13.2	19.5
Others ^a	Pct.	25.9	28.9	9.9	18.6
Land double cropped, hay and grazing, and hay and seed	Pct.	19.1	11.8	11.5	13.0
Temporary crops per cow	Acre	.52	.91	.63	.69
Pasture per cow	Acre	2.2	3.0	4.7	3.4
Land charged to beef per cow	Acre	1.8	3.1	4.6	3.3
Pasture cost per cow	Dol.	30.64	45.91	56.66	45.63

^aOthers included Coastal bermudagrass, fescue, clovers, dallisgrass, johnsongrass, and combinations of these.

Fertilizer cost per acre was approximately the same for the low and high cost groups.

The low cost producer had a lower cost per ton of harvested forages (hay) because of higher yields per acre. One producer in the low cost group elected to feed peanut hulls and no hay thereby raising the miscellaneous feed cost and lowering the harvested forage cost. The middle and high cost producers fed more grain per cow, primarily corn, Table 15, and this accounted for over 50 per cent of the difference in feed cost per cow between these two groups.

Interest on beef animal investment was a major cost per cow. If value per head is used as an indication of quality, the low cost producers

Table 15. Feeds Fed Per Cow by 43 Beef Calf Producers, South Alabama, 1962^a

Item	Unit	Cost group			Average all groups
		Low	Middle	High	
Producers	No.	10	13	20	43
Amount fed per cow:					
Corn	Bu.	8.6	11.1	14.0	11.5
Hay	Lb.	1,145	1,174	1,432	1,264
Crude protein ^b	Lb.	79.0	88.9	66.3	77.5
Feed cost per cow ^c	Dol.	31.63	38.89	43.43	38.53

^aAmounts fed are averages for the total fed by the group.

^bIncludes crude protein from oil meals and range pellets only.

^cFeed cost includes the cost of salt, minerals, cobs and shucks, hulls and other grains fed per cow.

had the highest quality brood cows, Table 16. The middle cost producers placed a higher value per head on the bulls used for breeding purposes. Replacement cattle in herds of high cost producers were the highest in value per head for all three groups.

Labor cost per cow was almost twice as great for the high cost group as for each of the other groups. Hours of labor for feeding and handling cattle averaged 10.5, 9.6, and 18.7 for the low, middle, and high cost producers, respectively. Buying and selling labor cost per cow was \$0.14, \$0.22, and \$0.69 for the low, middle, and high cost producers. No relationship ($r = -.109$) between number of cows and hours of labor used per cow was found as a result of correlating these two variables.

Output comparisons. Pounds of beef sold per cow averaged 348, 343, and 264 for the low, middle, and high cost producers, respectively,

Table 16. Average Number of Beef Cattle, Value, and Interest Charge, 43 Beef Calf Producers, South Alabama, 1962

Item	Cost group									Average all groups		
	Low			Middle			High			Average all groups		
	No.	Value		No.	Value		No.	Value		No.	Value	
		Per head	Per farm		Per head	Per farm		Per head	Per farm		Per head	Per farm
Farms	10			13			20			43		
Cattle per farm:												
Cows	88	\$155	\$13,640	79	\$145	\$11,455	56	\$125	\$ 7,000	72	\$140	\$10,080
Bulls	3	400	1,200	3	525	1,575	2	320	640	3	410	1,230
Replacements	12	110	1,320	14	140	1,960	13	145	1,885	13	137	1,781
Raised calves	43	64	<u>2,752</u>	48	85	<u>4,080</u>	30	70	<u>2,100</u>	38	75	<u>2,850</u>
Total investment			<u>\$18,912</u>			<u>\$19,070</u>			<u>\$11,625</u>			<u>\$15,941</u>
Interest rate			<u>.05</u>			<u>.05</u>			<u>.05</u>			<u>.05</u>
Interest on herd investment			\$945.60			\$953.50			\$581.25			\$797.05
Interest per cow per year ^a			10.75			12.06			10.38			11.07

^aInterest as calculated here differs slightly from that in Table 13 as a result of procedure used.

Table 17. The middle cost group, as an average, sold the heaviest calf, 506 pounds, as compared to 462 and 454 pounds for the low and high cost groups. The pounds of beef sold per cow varied because of death losses, number of raised replacements and the percentage calf crop. Calf death losses were highest in the high cost group, 2.6 per cent of calves born, as compared to 1.0 per cent and 2.0 per cent for the low and middle cost groups.

Table 17. Comparison of Selected Output Factors, 43 Beef Calf Producers, South Alabama, 1962

Factor	Unit	Cost group			Average all groups
		Low	Middle	High	
Calves born per cow	No.	.87	.85	.82	.84
Calf sales as proportion of brood cows	Pct.	75	68	57	66
Calf sales as proportion of calves born	Pct.	87	80	70	78
Average weight of calf sold	Lb.	462	506	454	477
Average age of calf sold	Mo.	8.1	9.9	7.7	8.5
Amount of beef sold per cow	Lb.	348	343	264	315

All groups were increasing herd size as a result of holding raised replacements. The average low cost producer increased herd size during 1962 by only 2 females; whereas, the average middle and high cost producer increased herd size by 10 and 9 females, respectively. The low cost producers appeared to be following a more rigid culling program with brood cows.

Net Returns

Five low cost producers had a positive net return to land and management. Three low cost producers had a positive net return to management after land was charged at 5 per cent of its fair market value as reported by producers. None of the middle or high cost producers had a positive net return to management even though no land charge was included.

The average low and middle cost producer covered all cash expenses, Table 18. The net return above cash expenses for the average low cost producer was \$44.01 per cow and \$29.99 per cow for the average middle cost producer. The average high cost producer had a loss of \$0.16 per cow over cash expenses. Net return above total expenses, excluding land, was low, averaging only \$4.25 per cow for the low cost producers.

Land Charge

With a land charge computed at 5 per cent of the estimated present market value, the range in land charge per hundredweight of market beef sold was as follows:

<u>Cost group</u>	<u>Land charge per hundredweight</u>
Low	\$1.40 - \$10.20
Middle	1.60 - 9.00
High	2.80 - 20.80

Land values varied tremendously among groups. The range in the estimated present market value of land used for beef production was \$50 to \$300 per acre. Over 90 per cent of the operators reported the land used for beef at a higher value than the acquisition price. Over 60 per cent of the producers reported that the land had more than doubled in

Table 18. Net Return per Farm as Reported by 43 Producers of Beef Calves, South Alabama, 1962

Item	Cost group		
	Less than \$25.00 per cwt.	\$25.00 to \$34.99 per cwt.	\$35.00 per cwt. and over
Number of farms	10	13	20
Average number of brood cows	88	79	56
Acres used for beef per farm	163	244	285
Market beef sold per farm, cwt.	307.6	272.1	155.2
Price received per cwt. of market beef sold	\$ 23.67	\$ 22.19	\$ 21.49
Average cost per cwt. of market beef sold	\$ 22.45	\$ 30.50	\$ 45.39
Cash receipts per farm:			
Market beef sales	\$7,279.60	\$ 6,035.92	\$ 3,335.55
Breeding stock sales	1,256.00	586.15	674.90
Inventory change	304.50	826.92	1,141.50
Total credits per farm	\$8,840.10	\$ 7,448.99	\$ 5,151.95
Expenses per farm:			
Cash expenses ^a	\$4,502.45	\$ 4,734.53	\$ 4,554.41
Noncash expenses	3,498.60	4,630.12	3,699.45
Purchases	465.00	345.38	606.50
Total expenses per farm (excludes land charge)	\$8,466.05	\$ 9,710.03	\$ 8,860.36
Net return above cash expenses per farm	\$3,872.65	\$ 2,369.08	\$ -8.96
Net return above cash expenses per brood cow	44.01	29.99	-.16
Net return above cash expenses per cwt. of market beef sold	12.59	8.71	-.06
Net return above total expenses per farm	\$ 374.05	\$-2,261.04	\$-3,708.41
Net return above total expenses per brood cow	4.25	-28.62	-66.22
Net return above total expenses per cwt. of market beef sold	1.22	-8.31	-23.89

^aDoes not include cash expenses for tractor and machinery use, buildings, fences and budgeted pasture costs.

value since purchase. Fourteen per cent of the producers reported that the land had been inherited.

IMPROVEMENTS IN BEEF CALF PRODUCTION

Analysis of the cost data indicated that returns to beef calf production were generally low. The average low cost producers in all areas were the only producers to have a positive net return to land and management. The average low cost Central Alabama producer had the highest net return of all the low cost producers in the State.

Based on discussions with animal scientists, agronomists, economists, and substation superintendents, beef cattle budgets were prepared to incorporate significant findings of this study and current recommendations of the Alabama Agricultural Experiment Station. The budgets are presented in two parts, variable and fixed expenses. Variable expenses are for those expense items that would stop if the herd were liquidated. Fixed expenses are for those expense items that would continue regardless of production.

Returns above variable expenses may be more meaningful to the farm operator than the total cost of production. The beef enterprise may be economically desirable on the farm even though the total noncash costs are not fully covered. If there is no alternative use for the fixed input or there is no alternative use which would yield a higher return, it would be desirable for the farmer to continue production of beef calves as long as there is a return above variable expense and no new investment is required.

Budgets for pasture and hay establishment costs plus annual expense budgets are shown in Appendix B. The total amount of investment

capital required is included in table form. Above average management would be required for adoption of the budgeted practices as presented.

The beef cattle enterprise was assumed to bear all the expenses for tractor and machinery shown in the investment tables. Equipment for establishment of the pasture and hay crops not in the investment tables was assumed to be owned but the investment was charged to other enterprises. Tractor and machinery costs are based on unpublished data from the Department of Agricultural Economics of Auburn University. Description of the budgets is similar to that of Dr. E. J. Partenheimer and T. H. Ellis as used in Costs and Returns from Livestock Production in the Limestone Valley Areas of Alabama.¹⁴

Central Alabama

The Central Alabama budget, Tables 19, 20, and 21, is based on a herd of 150 cows weighing 1,000 pounds each, 15 yearling replacement heifers and 6 bulls. The cows are from one of the beef breeds and the bulls are performance tested. A bull is purchased every year for about \$600 and is used for six breeding seasons. The first year he is used to breed heifers and second calf cows, and no calves from first calf heifers are used as replacements. Also no calves are saved as replacements from second calf cows. For the next three years he may be used to breed any of the cows. During the last two years he is used in breeding only older cows.

¹⁴E. J. Partenheimer and T. H. Ellis, Costs and Returns from Livestock Production in the Limestone Valley Areas of Alabama, Alabama Agricultural Experiment Station, Mimeograph, December 1960.

Table 19. Estimated Investment Components for a 150 Beef Cow Herd,
Improved Practices, Central Alabama

Item	Description	Cost basis	Average basis
Land (including farmstead) ^a	314.5 acres at \$100	\$34,450	\$34,450
Building ^b		2,850	1,425
Pasture establishment	275.9 acres at \$3.24	894	447
Hay establishment	58.5 acres at \$45.46	2,661	1,330
Livestock ^b		<u>27,600</u>	<u>27,600</u>
Subtotal		\$68,455	\$65,252
Machinery and equipment: ^c			
Tractor	3-plow	\$ 3,300	\$ 1,650
Bottom plow	3-plow	340	170
Disc	8.5-foot	275	138
Rotary mower	7-foot	430	215
Mower	7-foot	350	175
Side delivery rake	8-foot	500	250
Baler	Twine	<u>1,750</u>	<u>875</u>
Subtotal		\$ 6,945	\$ 3,473
Total		\$75,400	\$68,725

^aIncludes source of water and fencing.

^bSee Table 20.

^cInterest on investment and other machinery and equipment costs were included in the pasture and hay budgets. Equipment for pasture establishment was considered owned but the investment costs were charged to other enterprises.

One hundred and thirty-five calves are weaned per year and fifteen heifers are kept as replacements. Heifers are bred to calve at 24 months of age. Most calves are dropped in November and December with the remaining ones being born in January. The bull calves are castrated at birth.

A record of the sire and dam of each calf is kept so the cows may be performance tested. The calves are sold as stocker and feeder calves weighing 500 pounds each.

Table 20. Estimated Investment Requirements and Annual Costs For a 150 Beef Cow Herd, Improved Practices, Central Alabama

Item	Number	Value		Interest	Annual costs		Total
		New	Average		Depre- ciation and repairs	Taxes and insurance	
Cows	150	\$22,500	\$22,500	\$1,125.00			\$1,125.00
Bulls	6	3,600	3,600	180.00			180.00
Replacements	15	1,500	1,500	75.00			75.00
Hay storage and feeding rack	1	2,200	1,100	66.00	\$110.00	\$44.00	220.00
Corral, brake and loading chute	1	650	325	19.50	32.50	13.00	65.00
Total		\$30,450	\$29,025	\$1,465.50	\$142.50	\$57.00	\$1,665.00

Medical and veterinary expense includes drenching the cows and heifers twice each fall with phenothiazine. Cows which fail to breed during the three month breeding season are sold each fall with their calves. Feed requirements are figured on the basis of cow units. A cow and a calf or a bull is figured as one cow unit and a replacement heifer is figured as .75 cow unit. Thus the herd consists of 167.25 cow units.

Each cow unit requires 1.65 acres of dallisgrass and white clover for pasture and .35 acres of johnsongrass and Caley peas for hay and grazing. The .35 acres of johnsongrass and Caley peas are pastured from March 1 until the clover and dallisgrass growth is sufficient to meet the feed requirements of the animals, and then the cows are removed so that hay can be harvested. The dallisgrass and white clover are pastured the remaining time. Johnsongrass and Caley peas are cut for hay three times with a total yield of 3 tons per acre.

Table 21. Estimated Costs and Returns from Beef Calf Production, 150
Beef Cows, Improved Practices, Central Alabama

Item	Unit	Price	Quantity	Total for herd	Average per cow
Gross returns:					
Calves	Cwt.	\$ 23.00	600	\$13,800.00	\$ 92.00
Cull cows ^a	Cwt.	13.00	135	1,755.00	11.70
Bulls	Cwt.	15.00	15	225.00	1.50
Total				\$15,780.00	\$105.20
Variable expenses:					
Pasture (dallis and white clover)	Acre	\$ 8.70	275.9	\$ 2,400.85	\$ 16.00
Pasture and hay (johnsongrass and Caley peas)	Acre	18.41	58.5	1,077.72	7.18
Cottonseed meal, 41%	Cwt.	3.80	234.2	889.96	5.93
Salt	Cwt.	1.75	41.8	73.15	.49
Deflourinated phosphate	Cwt.	4.25	16.7	70.98	.47
Veterinary and medical	Cow	1.25	150.0	187.50	1.25
Marketing:					
Hauling	Head	.50	134.5	67.25	.45
Commission	Dol.	.03	15,780.00	473.40	3.16
Labor	Hour	.45	1,065	479.25	3.20
Bull	Dol.	600.00	1	600.00	4.00
Interest on operating capital	Dol.	.06	1,120.74	67.24	.45
Interest on investment in beef cattle	Dol.	.05	276.00	<u>1,380.00</u>	<u>9.20</u>
Subtotal of variable expenses				\$ 7,767.30	\$ 51.78
Return above variable expenses				\$ 8,012.70	\$ 53.42

(Continued)

Table 21. Continued

Item	Unit	Price	Quantity	Total for herd	Average per cow
Fixed expenses:					
Pasture (dallis and white clover)	Acre	\$ 1.52	275.96	\$ 419.46	\$ 2.80
Hay and pasture (johnsongrass and Caley peas)	Acre	12.85	58.54	752.24	5.01
Operator's labor	Hour	1.25	38.5	48.12	.32
Fencing	Acre	1.00	334.5	334.50	2.23
Buildings ^b				285.00	1.90
Property tax	Acre	.34	334.5	113.73	.76
Subtotal of fixed expenses				\$ 1,953.05	\$ 13.02
Total expenses				\$ 9,720.35	\$ 64.80
Net return to land and management				\$ 6,059.65	\$ 40.40

^aAssumes a one per cent death loss per year.

^bSee Table 20.

Hay feeding in the winter is liberal enough to prevent excessive weight loss. Hay is fed at the rate of 20 pounds per cow unit per day for a 90 to 100 day feeding period between November 15 and February 28. Cottonseed meal (41% protein) is fed during this period at the rate of approximately 1.5 pounds per day per cow unit.

Based on improved practices budget for Central Alabama, variable expense per hundredweight of all beef sold is \$10.36, and total expense per hundredweight is \$12.96. With an initial average investment of \$65,252, excluding machinery and equipment, the net return to land, capital and management is \$7,609.62 or 11.7 per cent of the average capital investment.

North Alabama

The North Alabama budget, Tables 22, 23, and 24, is based on a herd of 50 cows weighing 1,000 pounds each, 5 yearling replacement heifers and 2 bulls. The cows are from one of the beef breeds and the bulls are performance tested. A bull is purchased every 2 years for about \$600 and is used for four breeding seasons. The first two years he is used to breed heifers and young cows, and no calves are saved from first or second calf cows. For the next two years he is used on only older cows.

Forty-five calves are weaned each year and five heifers are kept as replacements. Heifers are bred to calve at 24 months of age. Most calves are dropped in November and December with the remaining ones being born in January. The bull calves are castrated at birth. A record of the sire and dam of each calf is kept so the cows may be performance tested. The calves are sold as stocker and feeder calves weighing 500 pounds each.

Medical and veterinary expense includes drenching the cows and heifers twice each fall with phenothiazine. Cows which fail to breed during the three month breeding season are sold each fall with their calves. Feed requirements are figured on the basis of cow units. A cow and calf or a bull is figured as one cow unit and a replacement heifer is figured as .75 cow unit. Thus the herd consists of 55.75 cow units.

Each cow unit requires 1.5 acres of orchardgrass and white clover for pasture and 1.4 tons of Coastal bermuda hay. The hay for the herd is grown on 15.6 acres with an average yield of five tons per acre. The pasture supplies the feed requirements of the animals from April 15 to

Table 22. Estimated Investment Components for a 50 Beef Cow Herd,
Improved Practices, North Alabama

Item	Description	Cost basis	Average basis
Land (including farmstead) ^a	99.2 acres at \$125	\$12,403	\$12,403
Buildings ^b		1,314	657
Pasture establishment	83.6 acres at \$41.56	348	174
Hay establishment	15.6 acres at \$49.55	773	386
Livestock ^b		<u>9,200</u>	<u>9,200</u>
Subtotal		\$24,038	\$22,820
Machinery and equipment: ^c			
Tractor (20%)	3-plow	\$ 660	\$ 330
Rotary mower	7-foot	430	215
Mower	7-foot	350	175
Fertilizer spreader	12-foot	340	170
Side delivery rake	8-foot	500	250
Baler	Twine	<u>1,750</u>	<u>875</u>
Subtotal		\$ 4,030	\$ 2,015
Total		\$28,068	\$24,835

^aIncludes source of water and fencing.

^bSee Table 23.

^cInterest on investment and other machinery and equipment costs were included in the pasture and hay budgets. Equipment for pasture establishment was considered owned but the investment costs were charged to other enterprises.

November 1. In addition to the pasture and hay, cattle will glean corn, cotton, small grain and hay fields.

Hay feeding in the winter is liberal enough to prevent excessive weight loss. Hay is fed at the rate of 20 pounds per cow unit per day for a 120 to 140 day feeding period in the winter. Cottonseed meal (41% protein) is fed during the feeding period at the rate of approximately 1.5 pounds per day per cow unit.

Table 23. Estimated Investment Requirements and Annual Costs for a 50 Beef Cow Herd, Improved Practices, North Alabama

Item	Num- ber	Value		Interest	Annual costs		Total
		New	Average		Depre- ciation and repairs	Taxes and insurance	
Cows	50	\$ 7,500	\$7,500	\$375.00			\$375.00
Bulls	2	1,200	1,200	60.00			60.00
Replacements	5	500	500	25.00			25.00
Hay storage and feeding rack	1	1,014	507	30.42	\$50.70	\$20.28	101.40
Corral, brake, and loading chute	1	300	150	9.00	15.00	6.00	30.00
Total		\$10,514	\$9,857	\$499.42	\$65.70	\$26.28	\$591.40

The improved practices budget for North Alabama does not appear as favorable as the Central Alabama budget. Variable expense per hundredweight of all beef sold is \$13.77; total expense per hundredweight of all beef sold is \$18.13. Assuming the stated prices for the beef sold and an average investment of \$22,820, excluding machinery and equipment (see footnote c, Table 22) the net return to land, capital and management is \$1,406.70 or 6.2 per cent.

South Alabama

The South Alabama budget, Tables 25, 26, and 27, is based on a herd of 100 cows weighing 1,000 pounds each, 10 yearling replacement heifers and 4 bulls. The cows are from one of the beef breeds and the bulls are performance tested. A bull is purchased every year and used for four breeding seasons. The first year he is used only on heifers

Table 24. Estimated Costs and Returns From Beef Calf Production, 50
Beef Cows, Improved Practices, North Alabama

Item	Unit	Price	Quantity	Total for herd	Average per cow
Gross returns:					
Calves	Cwt.	\$ 23.00	200	\$4,600.00	\$ 92.00
Cull cows ^a	Cwt.	13.00	45	585.00	11.70
Bulls	Cwt.	15.00	7.5	<u>112.50</u>	<u>2.25</u>
Total				\$5,297.50	\$105.95
Variable expenses:					
Pasture	Acre	\$ 8.96	83.62	\$ 749.28	\$ 14.98
Hay	Acre	65.36	15.6	1,019.62	20.39
Salt	Cwt.	1.75	13.9	24.32	.49
Cottonseed meal (41%)	Cwt.	3.80	100.4	381.52	7.63
Veterinary and medical	Cow	1.25	50.0	62.50	1.25
Marketing:					
Hauling	Head	.50	45	22.50	.45
Commission	Dol.	.03	5,297.50	158.92	3.18
Labor (feeding and hauling)	Hour	.50	540.0	270.00	5.40
Bull	Head	600.00	.5	300.00	6.00
Interest on operating capital	Dol.	.06	462.58	27.75	.56
Interest on investment in beef cattle	Dol.	.05	9,200.00	<u>460.00</u>	<u>9.20</u>
Subtotal of variable expenses				\$3,476.41	\$ 69.53
Return above variable expenses				\$1,821.09	\$ 36.42

(Continued)

Table 24. Continued

Item	Unit	Price	Quantity	Total for herd	Average per cow
Fixed expenses:					
Pasture (orchardgrass and white clover)	Acre	\$ 5.99	83.6	\$ 500.91	\$ 10.02
Hay (Coastal bermudagrass)	Acre	20.00	15.6	312.00	6.24
Operator's labor	Hour	1.25	18.4	23.00	.46
Fencing	Acre	1.00	99.2	99.22	1.9
Buildings ^b				131.40	2.63
Property tax	Acre	.34	99.2	<u>33.74</u>	<u>.67</u>
Subtotal of fixed expenses				\$1,100.27	\$ 22.00
Total expenses				\$4,576.68	\$ 91.53
Net return to land and management				\$ 720.82	\$ 14.42

^aAssumes a one per cent death loss.

^bSee Table 23.

and no replacements are saved from first calf heifers. For the next two years he may be used on any cows and the fourth year he is used only on older cows.

Ninety calves are weaned each year and ten calves are kept as replacements. Heifers are bred to calve at 24 months of age. Most calves are dropped in November and December with the remainder being born in October and January. The bull calves are castrated at birth. A record of the sire and dam of each calf is kept so the cows may be performance tested. The calves are sold as stocker and feeder calves weighing 475 pounds each.

Table 25. Estimated Investment Components for a 100 Beef Cow Herd,
Improved Practices, South Alabama

Item	Description	Cost basis	Average basis
Land (including farmstead) ^a	175 acres at \$100	\$17,500	\$17,500
Buildings ^b		1,950	975
Pasture establishment	142.7 at \$44.90	6,408	3,204
Hay establishment	22.3 at \$44.90	1,001	501
Livestock ^b		<u>18,400</u>	<u>18,400</u>
Subtotal		\$45,259	\$40,580
Machinery and equipment: ^c			
Tractor	2-plow	\$ 2,500	\$ 1,250
Mower	7-foot	350	175
Side delivery rake	8-foot	500	250
Hay baler	Twine	1,750	875
Rotary mower	7-foot	430	215
Fertilizer spreader	8-foot	275	138
Sod seeder	8-foot	<u>675</u>	<u>338</u>
Subtotal		\$ 6,480	\$ 3,240
Total		\$51,739	\$43,820

^aIncludes source of water and fencing.

^bSee Table 26.

^cInterest on investment and other machinery and equipment costs were covered in the pasture and hay budgets. Equipment for pasture establishment was considered owned but the investment costs were charged to other enterprises.

Medical and veterinary expense includes drenching the cows and heifers twice each fall with phenothiazine. Cows that fail to breed are sold with their calves. Cow units are used in figuring feed requirements. A cow and calf, or a bull, is figured as one cow unit and a replacement heifer is figured as 0.75 cow unit. Thus the herd consists of 111.5 cow units.

Table 26. Estimated Investment Requirements and Annual Costs for a 100 Beef Cow Herd, Improved Practices, South Alabama

Item	Num- ber	Value		Annual costs			
		New	Average	Interest	Depre- ciation and repairs	Taxes and insurance	Total
Cows	100	\$15,000	\$15,000	\$750.00			\$ 750.00
Bulls	4	2,400	2,400	120.00			120.00
Replacements	10	1,000	1,000	50.00			50.00
Hay storage and feeding rack	1	1,450	725	43.50	\$72.50	\$29.00	145.00
Corral, brake and loading chute	1	500	250	15.00	25.00	10.00	50.00
Total		\$20,350	\$19,375	\$978.50	\$97.50	\$39.00	\$1,115.00

Each cow unit requires 1.48 acres of Coastal bermuda for hay and pasture. Thus 165.0 acres of Coastal bermuda are required. Of the 165.0 acres, 111.5 acres are over seeded with vetch in late October or early November with a sod seeder. Of the remaining 53.5 acres, 22.3 acres are used for hay production. Each cow unit requires one ton of hay.

Hay feeding in the winter is liberal enough to prevent excessive weight loss. Hay is fed at the rate of 20 pounds per cow unit from the middle of November to February 20, at which time the cattle graze the vetch until the Coastal bermuda begins to furnish forage. Cottonseed meal (41% protein) is fed at the rate of 1.5 pounds per day per cow unit while the cows are fed hay.

Again, the net return to land and management is not as favorable as the Central Alabama budget. Variable expense per hundredweight of all

Table 27. Estimated Costs and Returns From Beef Calf Production, 100
Beef Cows, Improved Practices, South Alabama

Item	Unit	Price	Quantity	Total for herd	Average per cow
Gross returns:					
Calves	Cwt.	\$23.00	380	\$ 8,740.00	\$ 87.40
Cows ^a	Cwt.	13.00	90	1,170.00	11.70
Bulls	Cwt.	15.00	15	<u>225.00</u>	<u>2.25</u>
Total				\$10,135.00	\$101.35
Variable expenses:					
Pasture (Coastal and vetch)	Acre	\$21.77	111.5	\$ 2,427.36	\$ 24.27
(Coastal)	Acre	21.20	31.2	661.86	6.62
Hay	Acre	59.14	22.3	1,318.82	13.19
Cottonseed meal (41%)	Cwt.	3.80	156.1	593.18	5.93
Salt-trace mineralized	Cwt.	1.90	27.9	53.01	.53
Deflourinated phosphate	Cwt.	4.25	11.2	47.60	.48
Veterinary and medical	Cow	1.25	100	125.00	1.25
Marketing:					
Hauling	Head	.50	90	45.00	.45
Commission	Dol.	.03	10,135.00	304.05	3.04
Labor (feeding and hauling)	Hour	.50	1,050	525.00	5.25
Bull	Head			600.00	6.00
Interest on investment in beef cattle	Dol.	.05	18,400	920.00	9.20
Interest on operating capital	Dol.	.06	846.42	<u>50.79</u>	<u>.51</u>
Subtotal of variable expenses				\$ 7,671.67	\$ 76.72
Return above variable expenses				\$ 2,463.33	\$ 24.63

(Continued)

Table 27. Continued

Item	Unit	Price	Quantity	Total for herd	Average per cow
Fixed expenses:					
Pasture (Coastal and vetch)	Acre	\$ 5.89	111.5	\$ 656.74	\$ 6.57
(Coastal)	Acre	5.43	31.2	169.52	1.69
Hay	Acre	15.59	22.3	347.66	3.48
Fencing	Acre	1.00	165.0	165.02	1.65
Buildings ^b				195.00	1.95
Property tax	Acre	.34	165.0	56.11	.56
Operator's labor (buying and selling)	Hour	1.25	11.2	<u>14.00</u>	<u>.14</u>
Subtotal of fixed expenses				\$ 1,604.05	\$ 16.04
Total expenses				\$ 9,275.72	\$ 92.76
Net return to land and management				\$ 859.28	\$ 8.59

^aAssumes a one per cent death loss.

^bSee Table 26.

beef sold is \$15.82; total expense per hundredweight of all beef sold is \$19.13. Assuming the stated prices and an average investment of \$40,580, excluding machinery and equipment, (see footnote c, Table 25) the net return to land, capital and management is \$2,229.41 or 5.5 per cent.

Area Comparisons

The improved practices budgets suggest some minor changes when compared with actual data for the average low cost producers, Table 28. The fact that the average low cost producers were operating a similar program suggests that the management potential for profitable beef calf production is present. The higher net return as indicated in

Table 28. Comparisons of Budgeted Input and Output Factors with the Average Low Cost Producer and the Average Producer of Beef Calves, Central, North, and South Alabama, 1962

Item	Unit	Central Alabama			North Alabama			South Alabama		
		Budgeted	Average low cost producer	Average for area	Budgeted	Average low cost producer	Average for area	Budgeted	Average low cost producer	Average for area
Number of records		. .	17	47	. .	5	24	. .	10	43
Weight of calf sold	Lb.	500	455	454	500	510	473	475	462	477
Market beef sold per cow	Lb.	400	364	324	400	329	280	380	348	315
Proportion of calves born sold	Pct.	88.9	90.1	85.7	88.9	64.6	79.5	88.9	87.0	78.0
Land used per beef cow	Acre	2.2	3.9	4.5	2.0	3.3	3.7	1.6	1.8	3.3
Feed and pasture cost per cow	Do1.	37.88	44.39	62.68	59.75	59.45	85.79	62.76	62.27	84.16
Total cost per cow	Do1.	64.80	71.88	92.49	91.53	93.25	128.42	92.76	90.60	118.83
Price received per cwt. for market beef sold	Do1.	23.00	23.17	23.27	23.00	21.24	23.80	23.00	23.67	22.43
Net return above all expenses per cow	Do1.	40.40	20.94	-10.44	14.42	7.49	-43.76	8.59	4.25	-32.52

the budget for Central Alabama, as compared to the average low cost producer, was primarily the result of a lower feed cost per cow and a greater amount of market beef sold per cow.

The higher budgeted net return in North Alabama above the average return of the low cost producer was due in part to a higher price received and to the larger marketings per cow. The higher net return for the budget as compared to the average low cost producer in South Alabama was due to the increased marketings per cow.

In all instances the land used per beef cow was lower in the budget than in practice as reported by the beef calf producers. Higher stocking rates have two advantages: (1) they decrease the investment in land per cow, and (2) in most cases, they lower pasture cost per cow. The average low cost producer in South Alabama had the highest stocking rate reported, 1.8 acres per cow, and was approaching the budgeted stocking rate of 1.6 acres per cow.

In the budgets for all areas, market beef sales per cow were increased to about 400 pounds. This increase was possible by increased weaning weights and by increasing the proportion of calves born that were sold. The only exception to the latter reason for the increased marketings per cow was the average for low cost producers in Central Alabama.

The Central Alabama budget showed a decidedly higher net return as compared to other areas. One major reason for this advantage was lower pasture and feed cost per cow. Pasture and feed cost were lower in Central Alabama because of the prevalence of native grasses and the lower hay costs. Beef calf producers in Central and South Alabama had a

shorted feeding period than those in North Alabama. However, pasture and feed costs were lower in North Alabama than in South Alabama.

POTENTIAL FOR BEEF CALF PRODUCTION

Any discussion of potential must consider the principle of comparative advantage. In general this principle directs that a producer or area produce the product for which the greatest advantage or the least disadvantage exists. The Alabama farmer must consider other beef calf producing areas in planning for future production. According to Agricultural Statistics: 1963,¹⁵ Alabama ranked 21 in the number of calves born in United States and 14 in the number of calves marketed in 1962.¹⁶ Major competition in number of calves marketed is from Wisconsin, New York, Pennsylvania, Texas and bordering states.

As a basis for comparing the cost of producing beef calves in Alabama and other areas, budgets prepared by experiment station personnel in other areas and cost studies from other areas were used. An Oklahoma study,¹⁷ which should be applicable to Texas and the other states of the Range Livestock Region, indicated that the net return to land, labor, capital, management and risk was \$80.88 per cow. The net return to land and management per cow was \$41.97. This represents a return to 13

¹⁵United States Department of Agriculture, Agricultural Statistics: 1963, (Washington: Government Printing Office, 1963), p. 314.

¹⁶Ibid., pp. 316-17.

¹⁷Alfred L. Barr, et al., Beef Cattle Systems and Range Improvement Alternatives: Estimated Production, Income, and Costs, (Oklahoma State University, 1960) Processed Series 358, pp. 6 and 45.

acres of land. While the Oklahoma budget showed a higher net return to land and management than the Central Alabama budget, beef calf production in Oklahoma with improved practices required almost six times as much land per cow.

Total cost per cow in the Oklahoma budget, excluding land and management, was \$53.91. Pasture cost for the budget was zero. Feed cost per cow was \$10.83. The Central Alabama improved practices budget had a total cost, excluding land and management, of \$64.80 per cow. Alabama producers can market a heavier calf and more beef per cow. This would substantially reduce per unit costs of producing beef calves. It appears that Central Alabama producers can compete favorably with those in the Range Livestock Region of the United States. The other areas of Alabama do not provide as favorable competitive position.

A study of beef cow herd costs and returns in Southern Indiana¹⁸ based on 1956-59 physical data and long-run price relationships reported the long run total cost per cow to be \$87.72. The Central Alabama low cost producers had a cost of \$71.88 in 1962. The South and North Alabama low cost producers had total costs of \$90.60 and \$93.25 per cow, respectively. The average weaning weight of calves in the Indiana study was 449 pounds. The low cost producers in Alabama all sold a heavier calf. It would appear that Alabama producers should be able to compete with Southern Indiana producers.

¹⁸M. R. Janssen, Beef Cow Herd Costs and Returns in Southern Indiana, Agricultural Experiment Station, Purdue University, 1961, Research Bulletin 725.

A Southeastern Ohio study¹⁹ indicated that net returns to beef producers were low. The average producer in 1955 lost \$24.99 per cow; however, using the same physical inputs and outputs with 1960 prices, the loss was \$18.49 per cow. A comparison with the Alabama study was not advisable since a complete description of the costing method was not given. In general, the hay, grain, and silage cost per cow was almost twice the cost of that for the average Alabama producer. Pasture cost was not as high as those for Alabama producers, but the method of charging pasture was not definite.

Location of production centers for feeder calves in relation to markets for feeder calves must be considered when evaluating the competitive position of an area. The feeding and finishing phase of Alabama beef production has started to develop but is far behind the more established feeding areas of the Corn Belt, Arizona and California. The demand for feeder cattle by Alabama feedlot operators is not great enough to utilize the supply. Therefore, Alabama beef calf producers must look to markets for feeder cattle in other sections of the United States. Present marketing channels allow buyers or middlemen between feedlot operators and feeder calf producers to handle distribution of calves to meet the demand.

The price a feeder is willing to pay for an Alabama feeder calf is the price of a local feeder calf less the transportation charges, assuming equal performance in the feedlot for feeder calves available. Some feedlot operators in the Corn Belt and West have reported that they

¹⁹E. T. Shaudys and J. H. Sitterley, Costs, Returns and Profitability of the Beef Cow-Calf Enterprise in Southeastern Ohio by Systems of Management, Ohio Agricultural Experiment Station, 1963 Research Bulletin 937.

prefer feeder calves from the Southeast because of good performance in the feedlot.

In a Louisiana study, truck transportation costs were predicted for live cattle and calves from various shipping points in the Southeast to various receiving points.²⁰ Montgomery was the shipping point in Alabama. Transportation costs to Chicago, Des Moines and Denver were \$1.23, \$1.40 and \$2.82 per hundredweight, respectively. Assuming a homogeneous calf from all areas, the Denver feedlot operator would be willing to pay \$2.82 less per hundredweight for an Alabama calf in Alabama than for a similar calf in Denver.

The overall question as to supply of feeder calves has not been considered in this study due to the vast amount of data required for a thorough analysis of potential with respect to all factors in interregional competition for the feeder calf market.

Even though Alabama producers may be able to compete with other areas for a share of the feeder calf market, beef calf production may not be the most profitable enterprise for a given farm. Budgets that incorporated current recommendation of the Alabama Agricultural Experiment Station for the Wiregrass and Limestone Valley Areas of the State indicated that most row crops gave higher net return to land and management than the improved practices budgets for beef calves in North and South Alabama.²¹ The crops showing a higher net return to land and management

²⁰J. D. Goodwin, The Competitive Position of the Southeast in the Distribution of Feeder Cattle, Unpublished Ph. D. Dissertation, Louisiana State University, 1965.

²¹G. W. Clark and E. J. Partenheimer, Costs and Returns from Crop Production in the Wiregrass Area (Lower Coastal Plains) of Alabama, Alabama Agricultural Experiment Station, 1961, and E. J. Partenheimer and T. H. Ellis, Costs and Returns from Crop Production in the Limestone Valley Areas of Alabama, Alabama Agricultural Experiment Station, 1960.

in the Limestone Valley area were cotton, corn, soybeans for oil, soybean hay, oats for grain, wheat for grain, grain sorghum, alfalfa hay, sericea hay and annual lespedeza hay. The crops showing a higher net return per acre in the Wiregrass area were cotton, peanuts, corn, grain sorghum, soybeans for oil, oats for grain and Coastal bermudagrass hay.

Budgets have not been completed for the Central Alabama area. However, beef calf production is in a more competitive position in this area because of the higher net return per acre and the soil characteristics of the area. A high percentage of the soils in Central Alabama are not adapted to row-crop production. The heavy clays of the area are sticky when wet and hard when dry. Grasses and legumes are best adapted to these soils.

The break-even chart, Figure 4, illustrates the competitiveness among producers in the three areas in Alabama. Point A is the break-even point for Central Alabama producers. With a \$23 per hundredweight selling price and 285 pounds of market beef sold per cow, a Central Alabama producer using improved practices would cover all costs, excluding a charge for land and management. The North Alabama producer, using improved practices and a \$23 per hundredweight selling price, would require about 395 pounds of market beef sold per cow to cover total costs excluding land and management. Using the same assumption, the South Alabama producer would require 405 pounds of market beef sold per cow to cover total costs as budgeted.

As the price received per hundredweight decreases, the amount of market beef sales per cow required to cover total budgeted costs increases, but the Central Alabama producer would have the advantage assuming the same selling price per hundredweight in all areas.

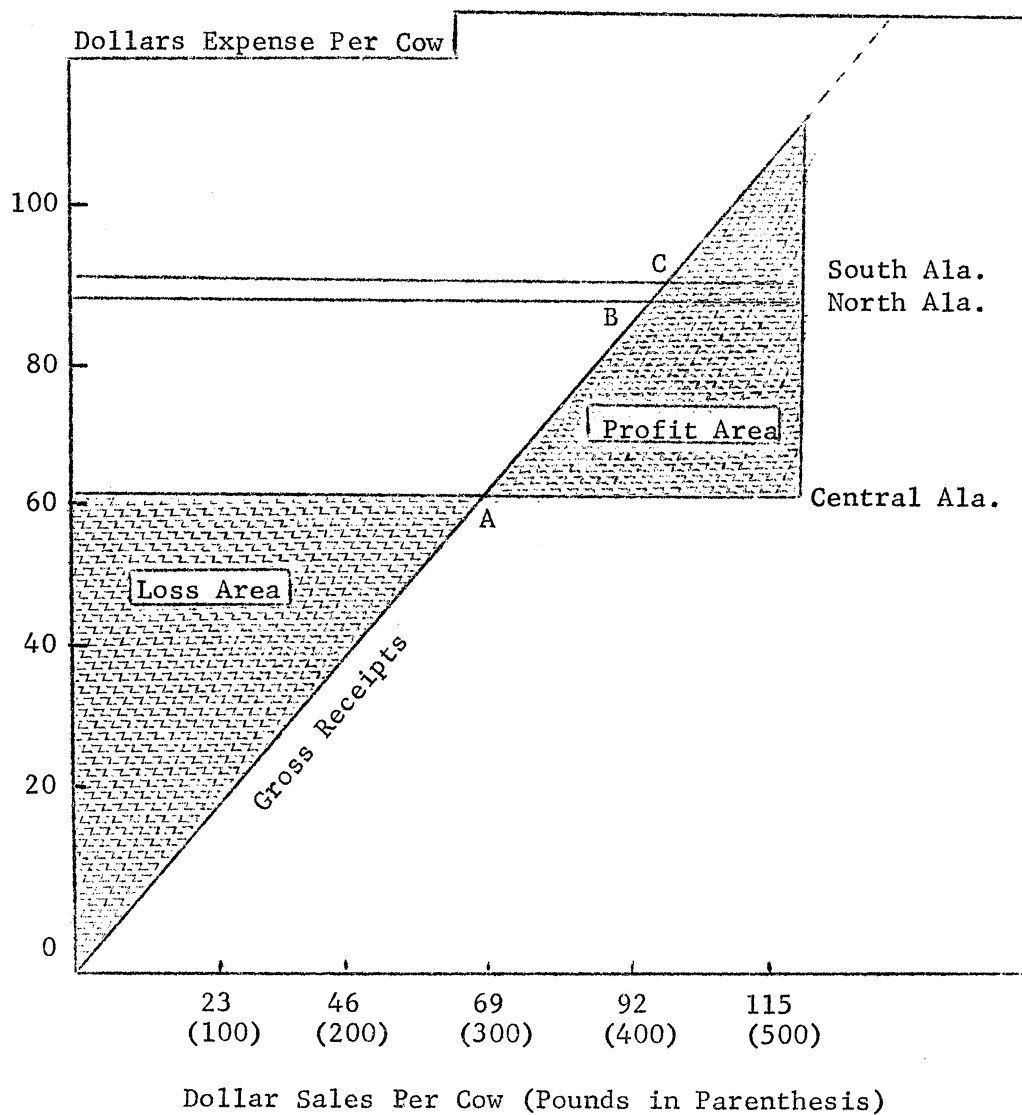


Fig. 4. Relationship of Varying Dollar Sales and Budgeted Total Expenses Per Cow to the Break-even Point in Producing Beef Calves, North, Central and South Alabama.

Summary and Conclusions

Production of beef calves is an important farm enterprise in Alabama. This study was made to determine costs involved, differences in costs among areas of the State, and to suggest improvements that might be made by cattle producers to enhance their competitive position. Cost and return data were obtained from 114 beef calf producers and from other sources.

The average net cost per hundredweight of market beef sold, excluding a charge for land, was \$26.63, \$39.41, and \$32.70 in Central, North, and South Alabama, respectively. Low cost producers in each area were \$9.00 to \$11.00 per hundredweight below the average cost for all producers. The major cost item per cow was pasture. A high degree of dependence on native grasses by producers in Central Alabama made possible the lower production costs in this area.

The number of pounds of market beef sold per cow was also highest in the Central Alabama area. In Central Alabama beef calf producers sold an average of 324 pounds of market beef per cow compared with 280 pounds for North and 315 pounds for South Alabama producers. Major factors that influenced pounds of beef sold per cow were percentage calf crop, death losses, replacement rate, and weight of calf sold.

Comparisons of actual cost and returns data with budgets that incorporated improved practices indicated that net returns from beef calf production could be increased substantially. Improvements would include higher stocking rates, production of heavier calves, lower replacement rates, and improved quality in breeding stock.

Data for the three major areas of Alabama were compared with information from comparable beef calf cost studies in other regions of the United States. The Central Alabama beef calf producer is in a favorable competitive position. Producers in North and South Alabama generally are not in as strong competitive position as a result of the relatively higher levels of net returns to land and management for crops such as cotton, peanuts, soybeans, and corn.

Alabama cattlemen can, by adopting better management practices, improve net returns from beef calf production. As the feeding and finishing phase of the cattle industry develops in Alabama and the South, increased competition for feeder and stocker calves from local cattlemen and those in other states should be a factor in increased net returns for beef calf production.

APPENDIX A

METHOD AND PROCEDURE USED IN CALCULATING COSTS

Basic data, primarily physical inputs used in raising beef calves were secured by personal interview. Information from published reports¹ that provided pasture, harvested forage, and other cost data for the Limestone Valley and Wiregrass Areas of Alabama were used as a guide in determining costs. For Central Alabama, pasture and harvested forage costs were estimated from conferences with agronomists, animal scientists, and agricultural economists of the Alabama Agricultural Experiment Station. Fertilizer costs were varied to conform with kinds and amounts actually used by farmers.

For each kind of pasture, hay raised, and silage crop, budgets were prepared that included all costs except fertilizer, taxes on land, a land charge, and management. (See Appendix B, Sections A through G). The budget cost data plus the cost of the fertilizer used, as reported by producers, were entered on a prepared cost summary form. Fertilizer prices paid were determined primarily by interviews with fertilizer dealers. Fertilizer prices used in calculating costs in all areas are reported in Appendix C.

When a crop was used for grazing and grain or seed, only half of the budgeted costs and fertilizer was charged to beef cattle. When a

¹T. H. Ellis and E. J. Partenheimer, Costs and Returns from Livestock Production in the Limestone Valley Areas of Alabama, Alabama Agricultural Experiment Station, mimeograph, 1960, and E. J. Partenheimer and G. W. Clark, Costs and Returns from Livestock Production in the Wiregrass Area (Lower Coastal Plains) of Alabama, Alabama Agricultural Experiment Station, mimeograph, 1961.

crop was used for hay and grazing, half of the budgeted costs and fertilizer was charged to pasture costs and the other half plus the cost of harvesting the hay, which was based on the number of cuttings, was charged to hay. The cost of hay per ton was found by dividing the calculated total costs by the tons produced. When a crop was used strictly for hay, the budgeted costs, fertilizer costs, and the costs of harvesting were included in the cost of producing the hay. In the case of peanut hay, only the costs of baling were charged to beef cattle.

The quantity of grain, protein, and other feeds fed to beef cattle, as reported, were charged on an opportunity cost basis. If grain was raised, the average price received by farmers in each area was charged. If the grain was purchased, the average price paid by farmers in each area was charged. (For a list of the prices charged, see Appendix D.)

Tractors and farm machinery used on pastures and in growing grain and forage crops were charged as set forth in the crop budgets used as a guide. However, for tractor use in preparing, hauling and handling feed for beef cattle, the following rates per hour were used in each area: (1) medium-size tractor, less than 25 drawbar horsepower, \$1.05, (2) large-size tractor, greater than 25 drawbar horsepower, \$1.38.

Vehicles used in hauling feed to cattle and hauling cattle to market were charged at \$.15 per mile if $\frac{1}{2}$ to $1\frac{1}{2}$ -ton capacity. If greater than $1\frac{1}{2}$ -ton capacity, including trailer trucks, the vehicle charge was \$.20 per mile. Hired hauling was charged as reported by the producer.

Man-hours of labor on pastures and forage crops were included on the budgets used as a guide in determining costs. Other labor costs

were based on data from farmers. Cattlemen were asked what they paid for hired labor. Based on the answers given, labor was charged at a rate of \$0.50 per hour in North and South Alabama and \$0.45 per hour in Central Alabama. Labor by the farm operator in connection with buying and selling cattle was charged at \$1.25 per hour.

The cattlemen were asked the total man-hours per year required in checking and handling cattle and in feeding cattle. The hours per year were multiplied by the wage rate to determine the labor cost. The operator reported the total operator man-hours per year spent buying and selling cattle. The number of hours times \$1.25 was the labor cost for buying and selling cattle.

The kind of feed processing equipment used was reported by the producer with the original cost, size, source of power, and the proportion of use that should be charged to the beef cattle enterprise. The original cost was multiplied by 15 per cent to obtain the annual costs for feed processing equipment. The annual cost included depreciation, repairs, interest, taxes, lubrication, gasoline, and electricity used.

If feed was ground and mixed on a custom basis, the charge was \$0.175 per bushel for grain and \$0.35 per hundredweight for hay.

Livestock investment costs were determined by charging a five per cent interest rate on the average inventory. The average inventory was found by addition of the beginning of year and ending of year values and dividing by two. Interest was charged on cows, bulls, replacements, and calves.

The original or replacement cost of buildings used for feed storage, housing or feed processing equipment, and for beef cattle was

reported by producers. The original or replacement cost times a 10 per cent rate gave the estimated annual building cost chargeable to beef cattle. The 10 per cent rate included four per cent for depreciation, three per cent for interest (equivalent of six per cent on half the original or replacement cost), two per cent for taxes and insurance, and one per cent for repairs.

Producers reported the acres of land fenced with the prorata share of fencing chargeable to beef. Annual fencing costs charged were \$1.00 per acre in North and South Alabama and \$0.85 per acre in Central Alabama. Fencing for woodland pasture used for beef cattle was charged at \$0.50 per acre in all areas.

If a producer used artificial breeding, the actual cost was reported and used in calculating the cost per pound of beef produced. The cost of bulls used for breeding purposes was included in the inventory adjustment. Other bull costs such as pasture and feed were included along with like costs for cows and young stock.

Medical and veterinarian costs were included based on the actual amount reported paid by the cattle producer. This cost included the cost of insecticides used for beef cattle.

Commission and yardage costs were charged according to the actual amount paid as reported by the producers.

For farms that reported natural sources of water, no water charge was included in calculating costs. When wells or ponds were reported, the initial cost of the well, water system, and pond was obtained from the producer. These initial costs were prorated among beef cattle and other water uses. The initial cost portion of water from wells chargeable

to beef was multiplied by five per cent and that from ponds was multiplied by one per cent to determine annual water costs.

Producers reported the estimated present market value per acre of farmland used for beef production and the average cost of land per acre if the farm was purchased. A land charge at five per cent of the present market value was calculated to determine the annual land costs. For land double cropped with a cash crop and used for beef cattle, it was assumed that the cash crop rather than beef cattle would bear the land charge.

Property taxes on land used for beef cattle were charged at \$0.34 per acre, the average rate for Alabama in 1962. Taxes on buildings, machinery, and equipment were included in their respective cost categories and charged to beef cattle.

Losses due to death of animals automatically were accounted for in the methods used in calculating costs. For raised or purchased animals that died, the cost of pasture and other feed was included as a cost and no sales resulted as a credit.

Credits.--Beef used for home consumption was credited the beef enterprise at \$0.20 per pound. Beef sales were credited as reported by producers.

Inventory changes and breeding stock sales of brood cows and bulls used for breeding purposes were credited against total costs to get an adjusted net cost of market beef sold. Cost per pound of beef sold was derived by dividing the adjusted net cost by the total pounds of market beef sold.

APPENDIX B

ESTIMATED COSTS OF FORAGE CROPS¹

A. Estimated Annual Costs Per Acre of Permanent Pasture and Hay Crops, Central Alabama, 1962

Tractor and machinery		\$1.07
Interest on operating capital (estimate)		.30
Labor		.45
1 ton of lime (prorated over 6 yrs.) (custom spread)		<u>1.00</u>
Subtotal		\$2.82

Annual share of establishment cost

Bahiagrass, 12-year life	\$3.45	\$6.27
Johnsongrass, 8-year life	5.88	8.70
Sericea, 10-year life	4.06	6.88
White clover and lespedeza, 10-year life	4.09	6.91
Fescue, 12-year life	4.02	6.82
Fescue and alsike clover, 10-year life	3.90	6.72
White clover, 5-year life	7.00	9.82
Bahiagrass and white clover, 12-year life	4.00	6.82
Coastal bermudagrass, 10-year life	6.01	8.83

If Caley peas are used, charge additional \$.52 for seed (20#/A @ 13¢, 5-year life)

.09 for labor
\$.61 total yearly charge

If clover and native grass, use one-half of \$9.82 or \$4.91.

Dallisgrass and common bermuda are considered native grasses.

¹These estimated costs were prepared from secondary data and from conferences with agronomists and animal scientists of the Alabama Agricultural Experiment Station. The budget costs do not include the cost of fertilizer applied annually. Amounts of fertilizer applied to forage crops annually were obtained from farmer interviews and charged at prevailing cost rates.

Estimated Establishment Costs Per Acre

Machinery cost: ²	
Cash	\$ 3.55
Noncash	2.93
Labor 3.8 hrs. @ \$.45	1.71
Lime 1 ton custom spread	6.00
0-16-8 500#/A. @ \$1.73/cwt.	8.65
Land \$65/A. @ 5% plus 30¢/A. taxes	3.55
Subtotal	<u>\$26.39</u>
Bahia 15# @ \$0.29	\$ 4.35
NH ₄ NO ₃ 200# @ \$3.90/cwt.	7.80
Int. on oper. capital @ 5%	12.88
Total	<u>\$41.42</u>
Johnsongrass 25# @ \$0.20	\$ 5.00
NH ₄ NO ₃ 200# @ \$3.90/cwt.	7.80
Int. on oper. capital @ 5%	7.88
Total	<u>\$47.07</u>
Sericea 30# @ \$0.20	\$ 6.00
Int. on oper. capital @ 5%	8.24
Total	<u>\$40.63</u>
White clover 6# @ \$0.85 (reseed every 3 years)	\$ 5.10
Lespedeza 10# @ \$0.20	2.00
Int. on oper. capital @ 5%	7.37
Total	<u>\$40.86</u>
Fescue 12.5# @ \$0.17	\$ 2.12
NH ₄ NO ₃ 200# @ \$3.90/cwt.	7.80
Int. on oper. capital @ 5%	11.98
Total	<u>\$48.29</u>
Fescue 9# @ \$0.17	\$ 1.53
Alsike clover 8# @ \$0.40	3.20
Int. on oper. capital @ 5%	7.84
Total	<u>\$38.96</u>
White clover 6# @ \$0.85	\$ 5.10
Int. on oper. capital @ 5%	3.50
Total	<u>\$34.99</u>
Coastal bermudagrass (custom planting and sprigs)	\$13.00
NH ₄ NO ₃ 200# @ \$3.90/cwt.	7.80
Int. on oper. capital @ 5%	12.89
Total	<u>\$60.98</u>

²For machinery costs, the following assumptions were used:

3-plow tractor used	1,000 hrs. per year
12' fertilizer spreader used	300 hrs. per year
7' rotary mower used	300 hrs. per year

B. Estimated Annual Costs Per Acre of Temporary Pasture, Hay, and Grain Crops, Central Alabama, 1962

Machinery cost:	
Cash	\$ 3.55
Noncash	2.93
Labor 3.8 hours @ \$0.45	1.71
Total	<u>\$ 8.19</u>
Caley peas 20# @ \$0.13	\$ 2.50
Oats 2 bu. @ \$1.53	3.06
Int. on oper. capital ³	.25
Total	<u>\$14.10</u>
Caley peas 10# @ \$0.13	\$ 1.30
Vetch 10# @ \$0.15	1.50
Int. on oper. capital ³	.21
Total	<u>\$11.20</u>
Oats 1.5 bu. @ \$1.53	\$ 2.30
Wheat .75 bu. @ \$2.15	1.62
Int. on oper. capital ³	.23
Total	<u>\$12.34</u>
Oats 1.5 bu. @ \$1.53	\$ 2.30
Rye 45# @ \$0.04	1.80
Crimson clover 10# @ \$0.29	2.90
Int. on oper. capital ³	.27
Total	<u>\$15.46</u>
Crimson clover 10# @ \$0.29	\$ 2.90
Ryegrass 15# @ \$0.11	1.65
Int. on oper. capital ³	.24
Total	<u>\$12.98</u>
Oats 2 bu. @ \$1.53	\$ 3.06
Vetch 10# @ \$0.15	1.50
Crimson clover 10# @ \$0.29	2.90
Int. on oper. capital ³	.27
Total	<u>\$15.92</u>
Oats 3 bu. @ \$1.53	\$ 4.59
Int. on oper. capital ³	.24
Total	<u>\$13.02</u>
Rye 60# @ \$0.04	\$ 2.40
Int. on oper. capital ³	.21
Total	<u>\$10.80</u>
Grain sorghum 6# @ \$0.18	\$ 1.08
Int. on oper. capital ³	.19
Total	<u>\$ 9.46</u>

Millet or Sudax 25# @ \$0.12	\$ 3.00
Int. on oper. capital ³	<u>.21</u>
Total	\$11.41
Ryegrass 25# @ \$0.11	\$ 2.75
Int. on oper. capital ³	<u>.21</u>
Total	\$11.15
Oats and Crimson clover	\$14.42
Rye and ryegrass	\$12.17
Oats and vetch	\$13.02
Vetch	\$11.40

Additional costs for hay
(Per cutting per acre)

Machinery cost	\$ 4.90
Labor	<u>1.94</u>
Total	\$ 6.84

Additional cost for combining grains or seeds
(Per acre)

Combining (based on custom rate)	\$ 8.00
Hauling (including labor and truck)	<u>2.00</u>
Total	\$10.00

C. Estimated Annual Costs Per Acre of Permanent Pasture and Hay Crops,
South Alabama, 1962

Tractor and machinery	\$ 1.31
Labor 1 hr./A. @ \$0.50/hr.	.50
Lime (1 ton every 5 years) (custom spread)	1.60
Interest on operating capital (Estimate)	<u>.30</u>
Subtotal	\$ 3.71

Annual share of establishment cost

Bahiagrass, 12-year life	\$ 4.70	\$ 8.41
Coastal bermudagrass, 10-year life	6.47	10.18
Fescue, 6-year life	7.59	11.30
Rescue, 3-year life	16.27	19.98
Dallisgrass, 5-year life	10.15	13.86
Johnsongrass, 5-year life	10.23	13.91

³Interest was charged on an average of \$10.00 of fertilizer per acre plus seed and other cash costs at a rate of 6 per cent for 6 months.

Kudzu, 10-year life	5.71	9.42
Dallisgrass and white clover, 10-year life	5.24	8.95
Crimson clover and bahia, 10-year life	5.26	8.97
Bahiagrass and sericea, 10-year life	5.10	8.81
Crimson clover, 5-year life	8.28	11.99
Dallisgrass, bahia, and white clover, 10-year life	5.47	9.18
Bahia and lespedeza, 10-year life	4.57	8.28
Dallisgrass and johnsongrass, 5-year life	10.19	13.90
White clover, 5-year life		11.51
Fescue and clover, 6-year life		8.07
Native grasses and clover		5.99
Dallisgrass and bahia		8.80
Dallisgrass and lespedeza		8.82
Johnsongrass and Caley peas		14.52

Estimated Establishment Costs Per Acre

Machinery cost: ⁴		
Cash		\$ 2.56
Noncash		2.76
Labor 4.8 hr. @ \$0.50		2.40
Lime 1 ton (custom spread)		8.00
0-16-8 600#/A. @ \$1.73		10.38
Land \$70.00/A. @ 5% plus \$0.30/A. taxes		<u>3.80</u>
Subtotal		\$29.90
Bahia 15# @ \$0.29		\$ 4.35
NH ₄ NO ₃ 200# @ \$3.90/cwt.		7.80
Int. on oper. capital @ 5%		<u>14.32</u>
Total		\$56.37
Coastal bermudagrass (custom planting and sprigs)		\$13.00
NH ₄ NO ₃ 200# @ \$3.90/cwt.		7.80
Int. on oper. capital @ 5%		<u>14.04</u>
Total		\$64.74
Fescue 12 1/2# @ \$0.17		\$ 2.12
NH ₄ NO ₃ 200# @ \$3.90/cwt.		7.80
Int. on oper. capital @ 5%		<u>5.74</u>
Total		\$45.56
Dallisgrass 10# @ \$0.85		\$ 8.50
NH ₄ NO ₃ 200# @ \$3.90/cwt.		7.80
Int. on oper. capital @ 5%		<u>5.54</u>
Total		\$51.74

⁴For machinery costs, the following assumptions were used:

2-pow tractor used	1,000 hrs. per year
8' fertilizer spreader used	100 hrs. per year
7' rotary mower used	250 hrs. per year

Rescue 40# @ \$0.20	\$ 8.00
NH ₄ NO ₃ 200# @ \$3.90/cwt.	7.80
Int. on oper. capital @ 5%	<u>3.13</u>
Total	\$48.83
Johnsongrass 25# @ \$0.32	\$ 8.00
NH ₄ NO ₃ 200# @ \$3.90/cwt.	7.80
Int. on oper. capital @ 5%	<u>5.47</u>
Total	\$51.17
White clover 4# @ \$0.85 (reseed every 5 years)	\$ 3.40
Dallisgrass 10# @ \$0.85	8.50
Int. on oper. capital @ 5%	<u>10.63</u>
Total	\$52.43
White clover 6# @ \$0.85	\$ 5.10
Int. on oper. capital @ 5%	<u>4.00</u>
Total	\$39.00
Bahia 15# @ \$0.29	\$ 4.35
Crimson clover 60# @ \$0.14 (reseed every 5 years)	8.40
Int. on oper. capital @ 5%	<u>10.03</u>
Total	\$52.68
Bahia 15# @ \$0.29	\$ 4.35
Sericea 30# @ \$0.20	6.00
Int. on oper. capital @ 5%	<u>10.75</u>
Total	\$51.00
Crimson clover 30# @ \$0.24	\$ 7.20
Int. on oper. capital @ 5%	<u>4.28</u>
Total	\$41.38
Dallisgrass 10# @ \$0.85	\$ 8.50
Bahia 15# @ \$0.29	4.35
White clover 4# @ \$0.85 (reseed every 5 years)	3.40
Int. on oper. capital @ 5%	<u>11.99</u>
Total	\$54.74
Bahia 15# @ \$0.29	\$ 4.35
Lespedeza 10# @ \$0.20	2.00
Int. on oper. capital @ 5%	<u>9.49</u>
Total	\$45.74
Johnsongrass 25# @ \$0.32	\$ 8.00
Dallisgrass 10# @ \$0.85	8.50
Int. on oper. capital @ 5%	<u>5.57</u>
Total	\$51.97

D. Estimated Annual Costs Per Acre of Temporary Pasture, Hay, and Grain Crops, South Alabama, 1962

Machinery cost:	
Cash	\$ 2.72
Noncash	2.56
Labor 4.8 hours @ \$0.50	2.40
Lime (1 ton prorated 5 years) (custom spread)	<u>1.60</u>
Subtotal	\$ 9.28
Oats 3 bu. @ \$1.53	\$ 4.59
Int. on oper. capital ⁵	.26
Total	<u>\$14.13</u>
Rye 90# @ \$0.04	\$ 3.60
White clover @ \$0.85	1.70
Int. on oper. capital ⁵	.27
Total	<u>\$14.85</u>
Millet or sudan 25# @ \$0.17	\$ 4.25
Int. on oper. capital ⁵	.26
Total	<u>\$13.79</u>
Wheat 1.5 bu. @ \$2.15	\$ 3.24
Int. on oper. capital ⁵	.24
Total	<u>\$12.76</u>
Rye 90# @ \$0.04	\$ 3.60
Int. on oper. capital ⁵	.24
Total	<u>\$13.12</u>
Vetch 15# @ \$0.20	\$ 3.00
Oats 1 bu. @ \$1.53	1.53
Rye 56# @ \$0.04	2.24
Int. on oper. capital ⁵	.28
Total	<u>\$16.33</u>
Wheat .75 bu. @ \$2.15	\$ 1.63
Rye 56# @ \$0.04	2.24
Vetch 15# @ \$0.20	3.00
Int. on oper. capital ⁵	.28
Total	<u>\$16.43</u>
Rye 56# @ \$0.04	\$ 2.24
Ryegrass 20# @ \$0.10	2.00
Int. on oper. capital ⁵	.28
Total	<u>\$13.78</u>
Ryegrass 25# @ \$0.10	\$ 2.50
Int. on oper. capital ⁵	.23
Total	<u>\$12.01</u>

Vetch 25# @ \$0.20	\$ 5.00
Int. on oper. capital ⁵	.26
Total	<u>\$12.12</u>
Milo 6# @ \$0.08	\$.48
Int. on oper. capital ⁵	.20
Total	<u>\$ 9.96</u>
Vetch 15# @ \$0.20	\$ 3.00
Oats 2 bu. @ \$1.53	3.06
Int. on oper. capital ⁵	.28
Total	<u>\$15.62</u>
Vetch 15# @ \$0.20	\$ 3.00
Rye 65# @ \$0.04	2.60
Int. on oper. capital ⁵	.28
Total	<u>\$15.16</u>
Oats 2 bu. @ \$1.53	\$ 3.06
Rye 56# @ \$0.04	2.24
Int. on oper. capital ⁵	.28
Total	<u>\$14.86</u>
Wheat .75 bu. @ \$2.15	\$ 1.62
Oats 1 bu. @ \$1.53	1.53
Rye 56# @ \$0.04	2.34
Int. on oper. capital ⁵	.28
Total	<u>\$15.05</u>
Oats 1.5 bu. @ \$1.53	\$ 2.30
Crimson clover 15# @ \$0.29	4.35
Int. on oper. capital ⁵	.30
Total	<u>\$16.23</u>
Ryegrass 12# @ \$0.10	\$ 1.20
Crimson clover 15# @ \$0.29	4.35
Int. on oper. capital ⁵	.28
Total	<u>\$15.11</u>
Rye 45# @ \$0.04	\$ 1.80
Crimson clover 15# @ \$0.29	4.35
Int. on oper. capital ⁵	.28
Total	<u>\$15.71</u>
Rye 45# @ \$0.04	\$ 1.80
Oats 1.5 bu. @ \$1.53	2.30
Crimson clover 10# @ \$0.29	2.90
Int. on oper. capital ⁵	.31
Total	<u>\$16.59</u>
Crimson clover 10# @ \$0.29	\$ 2.90
Oats 2 bu. @ \$1.53	3.06
Vetch 10# @ \$0.15	1.50
Int. on oper. capital ⁵	.31
Total	<u>\$17.05</u>

Oats 1.5 bu. @ \$1.53	\$ 2.30
Ryegrass 12# @ \$0.10	1.20
Int. on oper. capital ⁵	.20
Total	<u>\$12.98</u>

Additional costs for hay (per cutting per acre)

Machinery cost	\$ 5.08
Labor	2.25
Total	<u>\$ 7.33</u>

Additional cost for combining grain or seeds
(per acre)

Combine (based on custom rate)	\$ 7.00
Hauling (including truck & labor)	2.00
Total	<u>\$ 9.00</u>

E. Estimated Annual Costs Per Acre of Permanent Pasture and Hay Crops,
North Alabama, 1962

Tractor and machinery	\$ 1.11
Interest on operating capital (estimate)	.30
Labor	.50
Lime (2 tons prorated 5 years) (Custom spread)	2.20
Total	<u>\$ 4.11</u>

Annual share of establishment cost

Common lespedeza and white clover, 5-year life	\$ 9.30	\$13.41
Rescue, ryegrass, and Crimson clover, 3-year life	17.33	21.44
Dallisgrass, fescue, and Ladino clover, 10-year life	5.85	9.96
Fescue and white clover, 10-year life	5.04	9.15
Coastal bermudagrass, 10-year life	7.04	11.15
Sericea lespedeza, 12-year life	4.28	8.39
Bluegrass and orchardgrass, 10-year life	6.33	10.44
Bahiagrass, 12-year life	5.17	9.28
Dallisgrass and white clover, 10-year life	5.68	9.79
Fescue, white clover, bahiagrass, 10-year life	5.42	9.53
Crimson clover and johnsongrass, 10-year life	5.62	9.73
Common lespedeza and bahiagrass, 10-year life	5.34	9.45

⁵Interest was charged on an average of \$11.00 of fertilizer per acre plus seed and other cash cost at a rate of 6 per cent for 6 months.

Fescue and dallisgrass, 10-year life	\$ 5.62	\$ 9.73
Fescue, 10-year life	4.57	8.68
Bahiagrass, dallisgrass, and white clover, 10-year life	6.02	10.13
White clover, orchardgrass and fescue, 10-year life	5.20	9.31
Fescue, Crimson clover and common lespedeza, 10-year life	5.95	10.06
Orchardgrass, 10-year life	6.04	10.15
Dallisgrass, 10-year life	7.00	11.11
Rescue and ryegrass, 3-year life	5.65	9.76
Dallisgrass and common lespedeza, 10-year life	6.08	10.19
White clover, bluegrass and orchardgrass, 10-year life	5.83	9.94
Bahiagrass and dallisgrass, 10-year life	7.02	11.13

Common bermudagrass, Jap clover, carpetgrass, common lespedeza alone, and bluegrass alone were considered native grasses.

Estimated Establishment Costs Per Acre

Machinery cost:⁶

Cash	\$ 3.33
Noncash	2.00
Lime 1 ton (custom spread)	5.50
Labor 4.9 hrs. @ \$0.50	2.45
0-16-8 800#/A. @ \$1.50	12.00
Land \$200/A. @ 5% plus \$0.34/A. for taxes	<u>10.34</u>
Subtotal	\$35.62

Common lespedeza 25# @ \$0.20	\$ 5.00
White clover 2# @ \$0.85	1.70
Int. on oper. capital @ 5%	<u>4.19</u>
Total	\$46.51

Dallisgrass 10# @ \$0.85	\$ 8.50
Fescue 9# @ \$0.17	1.53
Ladino clover 2# @ \$0.85	1.70
Int. on oper. capital @ 5%	<u>11.11</u>
Total	\$58.46

Fescue 9# @ \$0.17	\$ 1.53
White clover 6# @ \$0.85 (reseed every 3 years)	5.10
Int. on oper. capital @ 5%	<u>8.17</u>
Total	\$50.42

⁶For machinery costs, the following assumptions were used:

3-plow tractor used	1,000 hours per year
12' fertilizer spreader used	100 hours per year
7' rotary mower used	200 hours per year

Coastal bermudagrass (custom planting and sprigs)	\$13.00
NH ₄ NO ₃ 200# @ \$3.90	7.80
Int. on oper. capital @ 5%	<u>13.97</u>
Total	\$70.39
Sericea lespedeza 30#/A. @ \$0.15	\$ 4.50
Int. on oper. capital @ 5%	<u>11.19</u>
Total	\$51.31
Bluegrass 8#/A. @ \$0.50	\$ 4.00
Orchardgrass 10#/A. @ \$0.36	3.60
NH ₄ NO ₃ 200# @ \$3.90	7.80
Int. on oper. capital @ 5%	<u>12.27</u>
Total	\$63.29
Johnsongrass 20# @ \$0.32	\$ 6.40
NH ₄ NO ₃ 200# @ \$3.90	7.80
Int. on oper. capital @ 5%	<u>11.88</u>
Total	\$61.69
Bahia 15# @ \$0.29	\$ 4.35
NH ₄ NO ₃ 200# @ \$3.90	7.80
Int. on oper. capital @ 5%	<u>14.23</u>
Total	\$62.00
Dallisgrass 10# @ \$0.85	\$ 8.50
White clover 2# @ \$0.85	1.70
Int. on oper. capital @ 5%	<u>10.65</u>
Total	\$56.78
Fescue 9# @ \$0.17	\$ 1.53
White clover 2# @ \$0.85	5.10
Bahia 10# @ \$0.29	2.90
Int. on oper. capital @ 5%	<u>9.08</u>
Total	\$54.23
Crimson clover 15# @ \$0.24	\$ 3.60
Johnsongrass 20# @ \$0.32	6.40
Int. on oper. capital @ 5%	<u>10.57</u>
Total	\$56.19
Rescue 20# @ \$0.18	\$ 3.60
Ryegrass 25# @ \$0.11	6.25
Crimson clover 15# @ \$0.24	3.60
Int. on oper. capital @ 5%	<u>2.92</u>
Total	\$51.99
Common lespedeza 25# @ \$0.20	\$ 5.00
Bahia 10# @ \$0.29	2.90
Int. on oper. capital @ 5%	<u>9.90</u>
Total	\$53.42

Fescue 9# @ \$0.17	\$ 1.53
Dallisgrass 10# @ \$0.85	8.50
Int. on oper. capital @ 5%	<u>10.57</u>
Total	\$56.22
Fescue 12# @ \$0.17	\$ 2.04
Int. on oper. capital @ 5%	8.05
Total	<u>\$45.71</u>
Bahia 10# @ \$0.29	\$ 2.90
Dallisgrass 10# @ \$0.85	8.50
White clover 2# @ \$0.85	1.70
Int. on oper. capital @ 5%	<u>11.53</u>
Total	\$60.25
Orchardgrass 10# @ \$0.36	\$ 3.60
White clover 2# @ \$0.85	1.70
Fescue 9# @ \$0.17	1.53
Int. on oper. capital @ 5%	<u>9.56</u>
Total	\$32.01
Fescue 9# @ \$0.17	\$ 1.53
Crimson clover 15# @ \$0.24	3.60
Common lespedeza 25# @ \$0.20	5.00
Int. on oper. capital @ 5%	<u>13.78</u>
Total	\$59.53
Orchardgrass 15# @ \$0.36	\$ 5.40
NH ₄ NO ₃ 200# @ \$3.90	7.80
Int. on oper. capital @ 5%	<u>11.56</u>
Total	\$60.38
Dallisgrass 15# @ \$0.85	\$12.75
NH ₄ NO ₃ 200# @ \$3.90	7.80
Int. on oper. capital @ 5%	<u>13.87</u>
Total	\$70.04
Rescue 20# @ \$0.18	\$ 3.60
Ryegrass 25# @ \$0.11	2.75
Int. on oper. capital @ 5%	<u>3.25</u>
Total	\$56.52
Dallisgrass 10# @ \$0.85	\$ 8.50
Common lespedeza 25# @ \$0.20	5.00
Int. on oper. capital @ 5%	<u>11.66</u>
Total	\$60.78
White clover 6# @ \$0.85 (reseed every 3 years)	\$ 5.10
Bluegrass 8# @ \$0.50	4.00
Orchardgrass 10# @ \$0.36	3.60
Int. on oper. capital @ 5%	<u>10.00</u>
Total	\$58.32

Bahia 15# @ \$0.29	\$ 4.35
Dallisgrass 10# @ \$0.85	8.50
NH ₄ NO ₃ 200# @ \$3.90	7.80
Int. on oper. capital @ 5%	<u>13.91</u>
Total	\$70.18

F. Estimated Annual Costs Per Acre of Temporary Hay, Pasture and Grain Crops in North Alabama, 1962

Machinery cost:	
Cash	\$ 2.37
Noncash	2.00
Labor 5 hr. @ \$0.50	2.50
Lime (2 ton prorated 5 yrs.) (custom spread)	<u>2.20</u>
Subtotal	\$ 9.07
Barley 1.5 bu. @ \$3.10	\$ 4.65
Int. on oper. capital ⁷	<u>.24</u>
Total	\$13.96
Rye 56# @ \$0.04	\$ 2.24
Crimson clover 10# @ \$0.24	2.40
Int. on oper. capital ⁷	<u>.24</u>
Total	\$13.95
Oats 2 bu. @ \$1.53	\$ 3.06
Vetch 10# @ \$0.15/#	1.50
Int. on oper. capital ⁷	<u>.24</u>
Total	\$13.87
Oats 3 bu. @ \$1.53	\$ 4.59
Int. on oper. capital ⁷	<u>.24</u>
Total	\$13.90
Oats 1.5 bu. @ \$1.53	\$ 2.29
Crimson clover 10# @ \$0.24	2.40
Int. on oper. capital ⁷	<u>.24</u>
Total	\$14.00
Wheat 1.5 bu. @ \$2.15	\$ 3.24
Int. on oper. capital ⁷	<u>.23</u>
Total	\$12.54
Millet or Sudax @ \$0.17	\$ 4.25
Int. on oper. capital ⁷	<u>.24</u>
Total	\$13.56
Oats 1.5 bu. @ \$1.53	\$ 2.29
Rye 56# @ \$0.04	2.24
Int. on oper. capital ⁷	<u>.24</u>
Total	\$13.84

Ryegrass 25# @ \$0.10	\$ 2.50
Int. on oper. capital ⁷	<u>.18</u>
Total	\$11.75
Soybeans 2 bu. @ \$6.25	\$12.50
Int. on oper. capital ⁷	<u>.34</u>
Total	\$21.91
Ryegrass 25# @ \$0.10	\$ 2.50
Oats 1 bu. @ \$1.53	1.53
Crimson clover 10# @ \$0.24	2.40
Int. on oper. capital ⁷	<u>.27</u>
Total	\$15.77
Crimson clover 20# @ \$0.24	\$ 4.80
Int. on oper. capital ⁷	<u>.25</u>
Total	\$14.12
Rye 90# @ \$0.04	\$ 3.60
Int. on oper. capital ⁷	<u>.23</u>
Total	\$12.90
Soybeans 1 bu. @ \$6.25	\$ 6.25
Sorghum 12# @ \$0.17	2.04
Int. on oper. capital ⁷	<u>.29</u>
Total	\$17.65

Additional costs for hay (per cutting per acre)

Machinery cost	\$ 4.90
Labor	<u>2.15</u>
Total	\$ 7.05

Additional cost for combining grains or seed (per acre)

Combining (based on custom rate)	\$ 9.00
Hauling (including labor and truck)	<u>2.00</u>
Total	\$11.00

⁷Interest was charged on an average of \$10.00 of fertilizer per acre plus seed and other cash cost at a rate of 6 per cent for 6 months.

G. Estimated Silage Cost Per Acre (Excluding Fertilizer) for Beef Cattle, Alabama, 1962⁸

Central Alabama

Corn Silage	
Machinery cost:	
Cash	\$14.50
Noncash	9.45
Labor 12.3 hrs. @ \$0.45	5.54
Seed	1.60
Interest	.95
Total	<u>\$32.04</u>

Sorghum Silage	
Machinery cost:	
Cash	\$15.50
Noncash	10.00
Labor 14 hrs. @ \$0.45	6.30
Seed	.40
Interest	.97
Total	<u>\$33.17</u>

South Alabama

Corn Silage	
Machinery cost:	
Cash	\$10.69
Noncash	8.62
Labor 12.3 @ \$0.50	6.05
Seed	1.36
Interest	.84
Total	<u>\$27.56</u>

Sorghum Silage	
Machinery cost:	
Cash	\$13.85
Noncash	9.31
Labor 14 hrs. @ \$0.50	7.00
Seed	.40
Interest	.94
Total	<u>\$31.50</u>

⁸Fertilizer costs were based on kind and amount actually used as reported by farmers.

North Alabama

Corn Silage	
Machinery cost:	
Cash	\$13.90
Noncash	9.05
Labor 12.3 hrs. @ \$0.50	6.15
Seed	1.68
Interest	<u>.82</u>
Total	\$31.60

Sorghum Silage	
Machinery cost:	
Cash	\$17.06
Noncash	9.74
Labor 14 hrs. @ \$0.50	7.00
Seed	.40
Interest	<u>1.03</u>
Total	\$35.23

APPENDIX C

FERTILIZER COSTS PER TON OR PER HUNDREDWEIGHT USED IN CALCULATING
BEEF CATTLE COSTS, ALABAMA, 1962A. Central Alabama

<u>Type</u>	<u>Cost/Ton</u>	<u>Cost/Cwt.</u>
0-10-20	\$ 38.50	\$ 1.93
0-12-12	35.00	1.75
0-14-14	36.50	1.83
0-16-8	34.50	1.73
0-20-20	56.50	2.83
4-12-12	40.00	2.00
8-8-8	42.50	2.13
8-14-14	55.60	2.78
10-10-10	50.00	2.50
10-12-12	55.20	2.76
14-14-14	75.00	3.75
16-8-8	59.20	2.96
NH ₄ NO ₃	78.00	3.90
Potash (60%)	52.00	2.60
Liquid N	220.00	11.00

B. South Alabama

0-5-5	\$ 13.00	\$ 0.65
0-12-12	35.00	1.75
4-12-12	40.00	2.00
6-18-18	72.00	3.60

B. South Alabama (continued)

6-24-24	\$ 76.00	\$ 3.80
6-28-24	75.00	3.75
8-8-8	42.50	2.13
12-12-12	65.50	3.28
13-13-13	69.50	3.48
NH ₄ NO ₃	78.00	3.90
Urea	100.00	5.00

C. North Alabama

0-10-20	\$ 38.50	\$ 1.93
0-12-12	35.00	1.75
0-14-14	38.00	1.90
0-16-8	30.00	1.50
0-20-10	41.00	2.05
0-30-30	78.00	3.90
0-20-20	47.00	2.35
4-12-12	40.00	2.00
6-8-8	34.00	1.70
6-12-12	42.00	2.10
6-24-24	76.00	3.80
7-9-9	40.20	2.01
8-8-8	42.50	2.13
8-24-24	78.50	3.93
10-10-10	50.00	2.50
13-13-13	69.50	3.48
14-14-14	73.50	3.68

C. North Alabama (continued)

15-15-15	\$ 75.00	\$ 3.75
NH ₄ NO ₃	78.00	3.90
30-10-0	87.00	4.35
Basic Slag	15.00	.75

D. All Areas

Superphosphate 18%	\$ 21.00	\$ 1.05
Superphosphate 20%	23.00	1.15
Nitrate of Soda	58.00	2.90
Amm. Sulphate	55.00	2.75
Anhydrous Amm.	130.00	6.50

APPENDIX D

PRICES OF GRAIN, PROTEIN AND MISCELLANEOUS FEEDS, 1962¹

<u>Item</u>	<u>North Alabama</u>	<u>Central Alabama</u>	<u>South Alabama</u>
Corn (if raised)	\$1.13/bu.	\$1.25/bu.	\$1.23/bu.
Corn (if purchased)	1.25/bu.	1.37/bu.	1.35/bu.
Oats	.82/bu.	.82/bu.	.82/bu.
Wheat	1.95/bu.	---	---
Barley	1.15/bu.	---	---
Molasses	70/T.	70/T.	70/T.
Cottonseed Meal 41% ²	76/T.	76/T.	76/T.
Cottonseed Meal 36% ²	72/T.	72/T.	72/T.
Soybean meal	84/T.	84/T.	84/T.
Cottonseed hulls	30/T.	30/T.	30/T.
Cottonseed	45/T.	45/T.	45/T.
Cobbs and shucks	10/T.	10/T.	10/T.
Alfalfa hay	36/T.	36/T.	36/T.
Other hay	25/T.	25/T.	25/T.
Salt-mineral mixture	38/T.	38/T.	38/T.
Salt	35/T.	35/T.	35/T.
Peanut hulls	18/T.	18/T.	18/T.
Commercial supplements	95/T.	95/T.	95/T.

¹Prices as reported by USDA.

²If pelleted, \$2.00 per ton was added to the cost.

Item	<u>North Alabama</u>	<u>Central Alabama</u>	<u>South Alabama</u>
Range pellets (20%)	\$70/T.	\$70/T.	\$70/T.
Minerals	94/T.	94/T.	94/T.
Peanut meal 45%	80/T.	80/T.	80/T.
Commercial creep feed	70/T.	70/T.	70/T.

