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The economics of beef cattle production in the Yazoo-Mississippi Delta

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The Economics Of Beef Cattle Production In The Yazoo - Mississippi Delta



Beef cattle on Coastal Bermuda pasture in Delta

MISSISSIPPI STATE UNIVERSITY
AGRICULTURAL EXPERIMENT STATION

HENRY H. LEVECK, Director

STATE COLLEGE

MISSISSIPPI

In Cooperation With
Farm Economics Division, Economic Research Service,
United States Department of Agriculture

TABLE OF CONTENTS

Title	Page
INTRODUCTION	5
LAND USE AND CROPLAND ORGANIZATION	6
INVESTMENT IN THE BEEF ENTERPRISE	7
Beef cattle	7
Building	8
Specialized equipment	9
Fencing	9
Summary of investments	10
BREEDING AND HEALTH PRACTICES	10
ANNUAL COSTS ASSOCIATED WITH THE BEEF ENTERPRISE	12
Pasture costs	12
Feed costs	12
Labor costs	15
Miscellaneous costs	16
Summary of operating costs	16
RETURNS TO THE BEEF ENTERPRISE	17
CHARACTERISTICS OF EFFICIENT BEEF ENTERPRISES	18
Returns to the beef enterprise	19
GENERAL SUMMARY	20
APPENDIX	21

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LIST OF TABLES

Table	Page
1. Land use by size of farm, Yazoo-Mississippi Delta, 1957	7
2. Cropland organization average per farm, by farm size group	7
3. Average beef cattle numbers and investment per farm, by class of animal and size of farm	8
4. Investment per farm and per animal in buildings, grain storage and corrals, by size of farm	8
5. Investment per farm for specialized equipment used in beef production, by size of farm	9
6. Fencing cost, by size of farm	9
7. Summary of capital investment in the beef cattle enterprise per farm and per head, by size of farm	10
8. Percentage calf crop, by size of farm	11
9. Livestock health practices	11
10. Major causes of death in beef cattle	11
11. Permanent pasture establishment cost per acre	12
12. Permanent pasture maintenance cost per acre	13
13. Temporary pasture establishment costs per acre	14
14. Type, amount, and value of feed fed per farm and per animal, by size of farm, cow-calf enterprise	14
15. Type, amount and value of feed fed per farm and per animal, by size of farm, for the steer enterprise	15
16. Estimated quantities and costs of labor used to feed cattle, by size of farm	15
17. Summary of itemized annual direct operating costs for cattle per farm and per animal by farm size groups	16
18. Gross returns to the beef enterprise per farm, by size of farm and class of livestock	17
19. Summarized costs and returns, beef cattle enterprises	18
20. Summary of costs and returns, selected efficient beef cattle operations	19

APPENDIX

1. Modal pasture composition per mature animal, cow-calf enterprise	21
2. Labor, power, and equipment cost per acre for establishment of permanent and temporary pastures	21
3. Labor, power, and equipment cost per acre for maintenance of permanent pasture	22
4. Other labor costs by size of farm	22
5. Miscellaneous expenses, beef cattle enterprise	22
6. Stocking rate on permanent pasture by size groups	22
7. Beef cattle inventory, farms under 1,000 acres	23
8. Beef cattle inventory, farms over 1,000 acres	23
9. Beef cattle inventory, all farms	24
10. Feed and permanent pasture costs per head resulting from the utilization of crop residues for the cow-calf enterprise by farm size group	24

CONCLUSIONS

This study shows that beef cattle production can be profitable in the Delta although on the average farm studied it was not.

The 13 more efficient producers averaged profitable returns from their beef cattle enterprises. Factors contributing to their success were:

- (1) The reduction of permanent pasture acreage requirements and cost per animal by utilizing crop residues and/or coastal bermuda.
- (2) Utilization of crop residue grazing to reduce supplemental feed costs by shortening the winter feeding period and the amounts of high quality feed required during the feeding period.
- (3) The reduction in fencing and building capital investment per animal resulting from the more intensive use of permanent pasture coupled with crop residue grazing.
- (4) Larger calf crops and heavier calves at sale time.

THE ECONOMICS OF BEEF CATTLE PRODUCTION IN THE YAZOO-MISSISSIPPI DELTA¹

By ARTHUR M. HEAGLER, FRED T. COOKE, JR., and GRADY B. CROWE²

Introduction

The popular concept of a typical Mississippi Delta plantation is a large row-crop farm producing cotton, soybeans, corn, rice, and other crops. Little, if any, livestock, other than workstock, is presumed to be found on these farms and until the last few years this assumption was generally true. With the imposition of acreage controls on cotton, which drastically reduced the acreage of this crop, and with only nominal success with some alternative crops, many Delta farmers have turned to livestock, especially beef cattle as a supplemental enterprise.

The increase in beef cattle numbers in the Yazoo-Mississippi Delta during the last few years has been marked. On January 1, 1950, there were 88,300 beef animals on Delta farms. By January 1, 1957, a peak of 372,000 head had been reached.³ A slight decrease in numbers occurred in 1957 and 1958 when 2 poor crop years forced many farmers to sell some of their breeding stock. This was coupled with a sharp increase in the value of brood cows and breeding heifers as restocking in drought areas of the West got underway. Also helping to account for the decline in numbers was the forced sale of animals caused by an outbreak of anaplasmosis in Delta herds.

Despite these factors, there were 245,000 beef animals on Delta farms on January 1, 1959. This represents an increase of 117 percent over 1950.

Increases in cattle numbers intensified the need for additional research on this enterprise. Input-output information on crop enterprises has been kept fairly current, but input-output data on livestock enterprises at the farm level are scarce.

A three-phase study was undertaken

in 1955 to provide input-output data for beef cattle enterprises and pastures in the Yazoo-Mississippi Delta. It was expected that after careful analysis this information could be used as a guide by farmers who were considering establishing or expanding a beef cattle enterprise.

This report deals with the first phase of the three-phase study which is a general description of beef cattle enterprises as they are found on Delta farms. The information in this report was obtained by personal interview from a sample of 68 beef producers in the area. The information collected included land use, cropland organization, beef cattle inventories, livestock production practices, labor requirements, and practices used in the production and use of forage crops, including permanent and temporary pastures. Only farmers who had commercial beef cattle enterprises for at least 3 years were included in the study. No purebred or show animal herds were included.

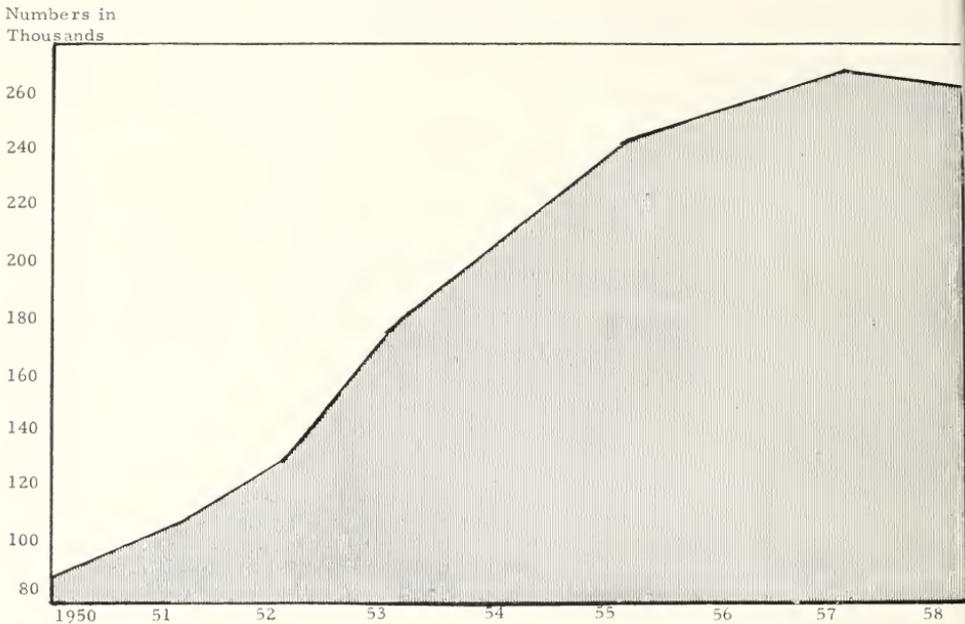
Phase two of the study will be concerned with detailed pasture output data obtained from a series of intensive case

¹This report is a part of a larger study of the Economics of Beef Cattle Production in the Delta. Additional reports covering results of other phases of the study are expected to be issued.

²Agricultural Economists, Farm Economics Division, Economic Research Service, United States Department of Agriculture, stationed at the Delta Branch of the Mississippi Agricultural Experiment Station, Stoneville, Miss.

³Mississippi Agricultural Statistics 1956, Base Book Supplement No. 2 and Mississippi Crop and Livestock Reporting Service, Livestock Summary 1958-59.

Figure 1. Beef Cattle Numbers, Yazoo-Mississippi Delta, Mississippi, 1950-59



farm studies. The analysis will be concerned primarily with a comparison of yield relationships among different pasture grasses, with existing levels of pasture and herd management, and with their respective places in Delta grazing systems.

Phase three of the study will deal with the place of beef cattle in Delta farming systems. It will appraise how beef cattle might profitably fit into existing cropping patterns through fuller use of under-used resources or byproducts of present cropping systems.

Land Use and Cropland Organization

Because of the nature of the enterprise, livestock farms are much larger than the average operating unit in the area. The average beef cattle farm studied contained slightly less than 2,000 acres of land, while the average unit for the area comprises only 332 acres. Because size of farm is important in beef cattle production, the farms studied were divided into two groups—small farms having less than

1,000 acres of land and large farms operating 1,000 acres or more (table 1). The small farms average 731 acres with 427 acres of cropland. Large farms averaged 2,420 acres of total land and 1,322 acres of cropland.

Size of farm apparently influenced very little the proportions of land devoted to specific uses. On the average farm, something less than 60 percent of the total acreage was devoted to cropland and about a third to pasture. Roughly 10 percent was in woods. Acreages indicated here as in pasture included some woodland used for pasture; about two-thirds of the farms studied utilized some kind of woodland pasture. Other uses accounted for 2 percent.

The fact that pastures occupied about a third of the total land farmed is one indication of the importance of the beef cattle enterprise on these farms. However, it also emphasizes the fact that livestock is still supplementary to crop production.

Cotton was the most important crop

grown on the farms studied; it occupied 36 percent of the cropland (table 2). Small farms tend to have a slightly higher proportion of cropland in this crop and a slightly lower proportion in soybeans. Soybeans occupy about a fourth of the cropland on the average and corn about 7 percent. So row crops account for roughly two-thirds of the cropland use. Small grains were grown on another 20 percent and the rest was devoted to silage and hay, temporary pastures, and miscellaneous uses. Some double cropping occurred as soybeans were planted after small grain and as small grains were used for temporary pasture and later harvested. The latter practice was used to a marked extent.

Investment in the Beef Enterprise

Beef Cattle. The principal item of production in the beef enterprise is the breeding herd. Table 3 presents the average number of animals in each class of livestock found on the farms studied.

Two items of particular note should be pointed out in these data. Beef cattle producers in the Delta do not save enough heifers to meet the replacement requirements of their herds. Operators of small farms saved a lower percentage of replacement heifers than those of large farms. The average of all farms studied indicates that replacement heifers are saved at a rate of 8 percent per year. Usually, 15 to 20 percent is required.

Table 1. — Land use, by size of farm, Yazoo-Mississippi Delta, 1957

Item	Farm size (acres)		All farms
	Under 1,000	Over 1,000	
Number of farms	18	50	68
	Average per farm		
	Acres	Acres	Acres
Land owned	513	1,827	1,480
Rented in	246	598	505
Rented out	28	5	11
Land operated	731	2,420	1,974
Cropland	427	1,322	1,085
Permanent pasture	195	597	491
Woods pasture	34	198	154
Woods not pastured	63	263	210
Other	12	40	34

Table 2. — Cropland organization, average per farm, by farm size group, Yazoo-Mississippi Delta 1957.

Item	Farm size (acres)		All farms
	Under 1,000	Over 1,000	
	Acres	Acres	Acres
Cotton	174	471	392
Corn	20	95	75
Soybeans for beans	92	358	288
Small grains	74	277	223
Other crops	—	5	3
Sorghum silage	6	13	12
Legume hay	22	50	43
Small grains grazed and harvested for grain	28	92	75
Temporary pasture	25	44	39
Acres double cropped ¹	18	37	32
Idle	17	34	29
Soil Bank	15	12	13

¹Soybeans after small grain.

Table 3. — Average beef cattle numbers and investment per farm, by class of animal and size of farm, Yazoo-Mississippi Delta, 1957.

Class of animal	Farm size (acres)					
	Under 1,000		Over 1,000		All farms	
	Number	Value	Number	Value	Number	Value
Cows	91	Dollars 11,949	170	Dollars 23,356	151	Dollars 20,337
Heifers	2	428	17	1,899	13	1,510
Bulls	4	1,903	7	2,828	6	2,583
Steers	17	1,498	37	1,854	32	1,760
Calves carried over	112	216	40	1,000	31	744
Calves born	276	—	136	—	122	—
Total	202	15,994	407	30,937	355	26,934

²Calves on hand beginning of year — January 1, 1957²Calves born during year.Table 4.—Investment per farm and per animal in buildings, grain storage, and corrals, by size of farm, Yazoo-Mississippi Delta, 1957.¹

Item	Farm size (acres)					
	Under 1,000		Over 1,000		All farms	
	Per farm	Per head ²	Per farm	Per head ²	Per farm	Per head ²
General barn	Dollars 1,501	Dollars 7.43	Dollars 2,380	Dollars 5.85	Dollars 2,147	Dollars 6.05
Hay shed	1,135	5.62	1,954	4.80	1,737	4.89
Grain storage	1,527	7.56	1,698	4.17	1,653	4.66
Silo	365	1.81	2,238	5.50	1,742	4.91
Corrals	567	2.80	591	1.45	585	1.65
Total	5,095	25.22	8,861	21.77	7,864	22.16

¹Investment represents replacement costs.²For all animals.

Two factors seem to account for this situation. First, purchasing replacements, rather than "growing your own," has been an established practice in the area. Second, in an attempt to improve the quality of their herds, many producers are buying animals of higher quality as herd replacements.

As a general practice, late-dropped calves and the "light weight end" of the calf crop are carried over and taken to heavier weights than those at which calves are usually marketed.

For the most part, the steers shown in table 3 are animals saved and fed out on the farms on which they were produced.

Table 3 also indicates the capital investment per farm for each class of animal. Brood cows are the largest item of investment, accounting for more than 75 percent of the total regardless of size of farm.

Buildings. — Buildings, corrals, and grain storage are second only to livestock as an item of investment in beef cattle production. Replacement costs of these facilities per farm and per head of livestock are shown in table 4. Since the expansion in beef cattle production is relatively recent, most of these facilities have been constructed since World War II. For example, all of the corrals, 90 percent of the silos, and 70 percent of the grain bins were erected during that time. Most of the general-purpose barns and hay sheds, products of the "workstock for power" era, are much older. However, they have been remodeled and reconditioned into beef cattle facilities. This has been an important factor in keeping down the investment for these facilities.

This is one of the few items in which scale of operation had any influence on production inputs or returns. The data collected in this study were subjected to intensive analysis to determine the rela-

tionships between scale and costs and returns. No definite relationships other than this instance were found. This appears to be a management problem which will be discussed more fully later.

Specialized Equipment. — Certain specialized items, such as feeding equipment and watering systems, are used in beef cattle production. Investment in these items of equipment are shown in table 5. The cost of watering systems accounts for roughly two-thirds of the investment in specialized equipment. Almost 60 percent of the farms studied had wells as their only source of water and another 20 percent had a combination of wells and surface sources. Twenty percent of the farms used water from natural sources and ponds.

The use of general-purpose farm trailers helped to keep investment in feed-hauling equipment relatively low.

Fencing. — Four-strand barbed wire with posts spaced one rod apart is the most common type of permanent fence used in the Delta. Steel or wire stays

are used between posts as necessary. Fencing costs, as can be seen from the data in table 6, are an important investment item in producing beef cattle; they average almost \$20 per animal.

Although large farms had 3 1/3 times as much pasture and only twice as many animals, large pastures reduced fencing costs per acre and per animal grazed.

The cost of fencing temporary pastures is relatively low because operators object to the use of permanent fencing for this purpose.

Temporary electric fencing is available at a cost of little over \$46 per mile.⁴ Electric fencing allows for excellent grazing control and is used extensively. Movement of the unit is simple and inexpensive.

Where permanent fencing or natural

⁴Total cost per mile \$46.61 Low-current battery-operated interrupted shock control \$14.00; 6-volt dry-cell battery \$3.17; 110 insulators \$2.46; 1-mile 12-gauge smooth wire \$18.98; labor \$8.00, stakes of scrap material. The maximum capacity of the control unit and battery is 15 miles, thus fencing cost per mile decreases as mileage increases to the maximum.

Table 5. — Investment per farm for specialized equipment used in beef production, by size of farm, Yazoo-Mississippi Delta, 1957.

Item	Farm size (acres)		
	Under 1,000	Over 1,000	All farms
	Dollars	Dollars	Dollars
Creeps	17	15	15
Feed bunks	353	615	560
Feed carts	35	148	118
Feed grinder	86	201	171
Motors	0	34	25
Water systems	952	1,930	1,671
Total per farm	1,443	2,943	2,560
Total per head	7.14	7.23	7.21

Table 6. — Fencing cost, by size of farm, Yazoo-Mississippi Delta, 1957

Item	Farm size (acres)		
	Under 1,000	Over 1,000	All farms
Miles of permanent fence			
Permanent pasture	7.2	13.8	12.1
Temporary pasture	.7	1.8	1.5
Total per farm	7.9	15.6	13.6
Total cost per farm ¹	\$3,959	\$7,817	\$6,815
Total cost per head	\$19.60	\$19.21	\$19.20

¹4-strand barbed wire most common type. Replacement cost \$501.11 per mile, from "Specified Production Costs for Cotton and Alternative Crops, Yazoo-Mississippi Delta" by Grady B. Crowe, Stoneville, Miss., March 1956.

barriers, such as drainage canals, exist on two or three sides of a temporary pasture, a "drover" is sometimes employed to herd the animals. This practice also holds down fencing costs.

Summary of Investments. — A summary of the capital investment items associated with beef cattle production is presented in table 7. Cattle account for 61 percent of the total investment. Buildings and fencing make up the bulk of the remainder.

Breeding and Health Practices

The cow-calf enterprise found on Delta farms is usually built around a fall and winter calving program. Approximately 82 percent of the 1957 calf crop was dropped from October 1 to March 1. The calves are marketed the following summer at a weight of 350 to 450 pounds. Calves born toward the end of the calving period are usually carried over on small grain grazing or roughage and sold the following spring.

This type of calving program is widely used by beef producers in the area for several reasons. The more important ones are: (1) Brood cows are in better condition at calving time, (2) cows give more milk over a longer period of time because of the seasonal improvement in pastures, (3) calves escape flies, screw worms, and heat while young, and (4) calves are weaned and ready for sale between

June 1 and September 1, the period when calf prices are usually highest.

The size of the calf crop is one of the chief factors affecting returns to the beef enterprise. Table 8 shows the calf crop percentages for the farms in this study. Small farms tend to have better calf crops than larger ones, probably because greater attention is given the smaller herds. Stillbirths and abortions are of major importance, accounting for 51 percent of all calf losses.

All farms studied used purebred bulls and grade brood cows. In some instances the bulls and part of the brood cows were registered. Seventy-nine percent of the operators of the farms surveyed reported brood cows to be predominantly a beef breed (80 percent or more beef blood). Only 4 percent of the operators reported brood cows predominantly of a dairy breed.

Shown in table 9 are the livestock health and sanitation practices found on the farms surveyed. The level of health and sanitation practices carried out was somewhat higher than that found in other beef-producing areas of the state.⁵ Even so,

⁵ "An Economic Appraisal of Beef Cattle Production in Northeast and East Central Mississippi." Miss. Agr. Expt. Sta. Bul. 497, State College, Miss., February 1947.

"An Economic Appraisal of Beef Production in South Mississippi." Miss. Agr. Expt. Sta. Bul. 518, State College, Miss., April 1954.

Table 7. — Summary of capital investment in the beef cattle enterprise per farm and per head, by size of farm, Yazoo-Mississippi Delta, 1957

Item	Farm size (acres)								
	Under 1,000			Over 1,000			All Farms		
	Investment			Investment			Investment		
	Per farm	Per head	Percent of total	Per farm	Per head	Percent of total	Per farm	Per head	Percent of total
Cattle	Dollars 15,994	Dollars 79.18	Percent 61	Dollars 30,937	Dollars 76.01	Percent 61	Dollars 26,934	Dollars 75.87	Percent 61
Buildings	5,095	25.22	19	8,861	21.77	18	7,864	22.16	18
Specialized equipment	1,443	7.14	5	2,943	7.23	6	2,560	7.21	6
Fencing	3,959	19.60	15	7,817	19.21	15	6,815	19.20	15
Total	26,491	131.14	100	50,558	124.22	100	44,173	124.44	100

Table 8. — Percentage of calf crop, by size of farm, Yazoo-Mississippi Delta, 1957¹

Size of farm	Calf crop
Acres	Percent
Under 1,000	84
Over 1,000	80
All farms	81

Table 9.—Livestock health practices, Yazoo-Mississippi Delta, 1957

Practice	Number herds receiving treatment	Percentage of herds treated	Percentage of all animals treated
Vaccination	Number	Percent	Percent
Anthrax	43	63	70
Blackleg	63	93	93
Malignant Edima	36	53	60
Bangs	30	44	47
Hemorrhagic septicemia	12	18	16
Leptospirosis	9	13	14
Other ¹	4	6	11
Grubs	20	29	19
Internal parasites	47	69	74
Spraying ²	53	78	86

¹Anaplasmosis — 2; Pink eye — 2.

²Treated herds sprayed an average of 5.3 times.

Table 10.—Major causes of death in beef cattle, Yazoo-Mississippi Delta, 1957.

Causes of death	Percentage of total deaths	
	Mature animals	Calves
Diseases (all)	Percent	Percent
Anaplasmosis	70	10
Forage poison	45	—
Bloat	14	—
Leptospirosis	6	—
Malignant edima	3	3
Scours	1	—
Black leg	— ¹	5
Other causes (all) ²	26	21
Abortions	—	16
Stillbirths	—	35
Unknown	4	18
Total	100 ³	100 ⁴

¹Less than 1 percent.

²Includes old age, accidents, calving, and weather.

³Cow death 2 percent of total numbers.

⁴Calf deaths 7 percent of total numbers.

vaccination for anthrax, leptospirosis, and septicemia were not up to recommended standards. Grubs are not a real problem in the area and less than a third of the herds were treated for them. Sixty-nine percent of the herds were treated for internal parasites, and 78 percent were sprayed an average of 5.3 times during the year.

The major causes of death of animals are shown in table 10. Anaplasmosis was the largest single cause of death among mature animals, accounting for 45 percent of the total. Abortions and stillbirths accounted for more than half of the calf losses. The average death loss per farm was 12 animals. Of the animals that died, 7.5 were calves, 4 were cows and heifers,

and 0.5 were bulls and steers.

Annual Costs Associated With the Beef Enterprise

Certain annual costs are associated with beef production. They consist primarily of the establishment and maintenance of pastures, feed and labor costs, upkeep of fencing and specialized equipment, and such miscellaneous items as veterinary fees, medicine, and salt.

Pasture Costs. — The chief item associated with beef production is pasture. It provides most of the feed for the cattle and is the major cash cost item. Shown in table 11 are the average establishment costs for the most common permanent pastures in the area. Seeding and fertilizer rates used are those reported by farmers; they are somewhat higher than the present recommended rates for the area. Cost rates for labor, power, and equipment use are those currently existing in the Delta. Four-row tractors and equipment are generally used in pasture establishment, except in the case of coastal bermuda, early plantings of which were sprigged in by hand. Now, however, both 2- and 4-row planting or sprigging machines are available, and their use sharply reduces labor requirements for this operation.

Pasture longevity in the Delta is rather short.⁶ This is due primarily to two things: (1) Pastures are often located on soils with poor surface and internal drainage, and (2) poor grazing control and maintenance practices result in overgrazing and heavy weed infestations. Only common and coastal bermuda have an average length of life exceeding 7 years. Johnson and Dallis grasses are estimated to last only 5 years. Since pasture establishment costs are prorated over the life of the pasture, the length of life has an important effect on the annual charge to the beef enterprise. For example, the cost of establishing an acre of Dallis grass pasture amounts to \$20 and the annual charge to \$4.01. Comparable figures for Coastal Bermuda are \$17.90 and \$0.89.

Annual maintenance costs of permanent pastures consist primarily of fertilizer applications and clipping for weed control. They range from \$1.49 per acre on fescue and wild winter peas to \$10.96 on native pastures (table 12).

A total annual per acre charge for pastures is obtained by combining the an-

⁶Estimated pasture longevity based on experimental results from pasture studies conducted at the Delta Branch Experiment Station by Dr. P. G. Hogg, Assistant Superintendent and Agronomist.

Table 11.—Permanent pasture establishment cost per acre, Yazoo-Mississippi Delta, 1957

Pasture type	Seed		Fertilizer ¹		Labor, power and equipment Dollars	Total cost Dollars	Length of life Years	Cost per year Dollars
	Pounds	Dollars	Pounds	Dollars				
Fescue	13	9.40	120	4.50	5.88	19.78	7	2.83
Common bermuda	5	4.20	144	5.40	4.23	13.83	20	.69
Johnson	25	3.00	—	—	5.80	8.80	5	1.76
Dallis	13	10.83	121	4.54	4.66	20.03	5	4.01
Coastal bermuda	² 14	6.28	—	—	13.01	26.30	—	1.32 ³
	² 14	6.28	187	7.01	4.61	17.90	20	.89 ⁴
Fescue	13	—	—	—	—	—	—	—
clover	3	7.38	122	4.57	4.48	16.43	7	2.35
Fescue	13	—	—	—	—	—	—	—
wild winter peas	30	6.87	122	4.57	4.48	15.92	7	2.27

¹Pounds of ammonium nitrate.

²Bushels.

³Hand sprigged.

⁴Machine sprigged.

Table 12.—Permanent pasture maintenance cost per acre, Yazoo-Mississippi Delta, 1957

Pasture type	Seed		Fertilizer ¹		Labor, power and equipment	Total cost	Annual cost per acre ⁴
	Dollars	Pounds	Dollars	Dollars	Dollars	Dollars	Dollars
Fescue	-----	115	4.31		2.16	6.47	9.30
Common bermuda	-----	137	5.14		2.61	7.75	8.44
Johnson	-----	-----	-----		2.34	2.34	4.10
Dallis	-----	131	4.91		2.26	7.17	11.18
Coastal	-----	-----	-----		3.10	10.49	² 11.81
bermuda	-----	1.97	7.39		3.10	10.49	³ 11.38
Fescue clover	-----	200	7.50		1.49	8.99	11.34
Fescue wild winter peas	-----	-----	-----		1.49	1.49	3.76
Levee	.78	86	3.22		2.19	6.19	6.19
Native	2.97	134	5.02		2.97	10.96	10.96

¹Pounds of ammonium nitrate.

²Hand sprigged.

³Machine sprigged.

⁴Includes prorated establishment costs.

nual cost of maintenance with the prorated establishment costs. The data are shown in table 12 for the major pasture types. These costs range from slightly less than \$4.00 on fescue and wild winter peas to almost \$12.00 per acre on coastal bermuda.

A variety of grasses may be utilized by the beef enterprise. However, intensive analysis of the pasture data indicate no important differences in pasture composition or annual cost per acre between small and large farms. A combination of fescue, Dallis, common bermuda, Johnson, and native grasses provided a major part of the grazing for the cow-calf enterprise on all farms. For a detailed breakdown of permanent pasture composition for cow-calf enterprises, see appendix table 1.

Small grains provided most of the grazing for steer enterprises. The average annual per acre charge of \$15 was reduced to \$3.65 by controlled grazing during late fall and winter and harvesting the grain the following spring. On all farms, 66 percent of the temporary grazing was handled in this way. On large farms, 68 percent, and on small farms 53 percent was so handled.

In addition to permanent pasture, temporary grazing crops are used to some

extent in producing beef. Costs of producing these grazing crops are shown in table 13. Except for crop residue, which is unique because it represents a salvage operation, costs of temporary pastures are relatively high. For this reason, this type of feed is usually used only for steers. In cow-calf production, where wintering must be done as cheaply as possible, little, if any, use is made of temporary pastures.

For a detailed breakdown of labor, power, and equipment charges for establishing and maintaining permanent and temporary pastures, see appendix tables 2 and 3.

Feed Costs. — Another important item of expense to the livestock enterprise is the feed fed to cattle. Table 14 presents the types, average amount, and average value of supplemental feed fed in cow-calf programs, by farm size groups. On most farms, it was necessary to supplement the grazing program with feed from October through March. In 1957, the feeding period averaged 111 days for all farms. As table 14 indicates, roughages, such as hay and silage, and protein supplement accounted for most of the feed used in cow-calf production.

The cost of supplement feed for the mature animals in the cow-calf enter-

Table 13.—Temporary pasture establishment costs per acre, Yazoo-Mississippi Delta, 1957.

Pasture type	Seed		Fertilizer ¹		Labor, power and equipment	Total
	Pounds	Dollars	Pounds	Dollars	Dollars	Dollars
Oats	23.03	3.12	149	5.59	5.60	14.31
Oats and ryegrass	23.30					
Oats and wheat	23.20	6.35	195	7.31	5.60	19.26
Rye grass	24.00					
Rye grass and clover	2.00	11.04	163	6.11	5.60	22.75
Wheat	20.00	1.60	125	4.69	5.60	11.89
Sudan	30.00					
Millet	5.00	6.00	100	3.75	5.60	15.35
Lespedeza	2.25	6.75	150	5.62	5.60	17.97
Crop residue	16.60	3.42	142	5.31	4.76	13.49
	15.00	2.10	112	4.20	4.78	11.08
	-----	7.35	-----	-----	1.45	8.80
	-----	-----	-----	-----	1.16	1.16

¹Ammonium nitrate.²Bushels.

Table 14.—Type, amount, and value of feed fed per farm and per animal, by size of farm, cow-calf enterprise, Yazoo-Mississippi Delta, 1957.

Item	Farm size (acres)		All farms
	Under 1,000	Over 1,000	
Protein supplement			
Amount — tons	4.1	14.2	11.5
Cost — dollars	287	998	810
Concentrate			
Amount — bushels ¹	67	145	125
Cost — dollars	69	128	112
Roughage — ton			
Hay	58.3	89.4	81.3
Cost — dollars	1,166	1,789	1,624
Silage	43.1	124.4	102.9
Cost — dollars	172	498	412
Other ²			
Amount	-----	-----	-----
Cost — dollars	4	24	19
Cost per farm — dollars	1,698	3,437	2,977
Cost per cow — dollars	17.51	17.71	17.51

¹Corn equivalent.²Includes range cubes and molasses.

price averaged \$17.51 per head for all farms. Hay accounted for 48 percent of the total feed cost per head, protein supplement 30 percent, silage 15 percent, and cottonseed hulls 7 percent. Each animal received an average of 1,211 pounds of silage, 769 pounds of hay, 138 pounds of protein supplement, and 116 pounds of cottonseed hulls.

All of the grain and purchased mixed feed fed in the cow-calf program was used to creep-feed calves. Calves are generally creep fed very lightly the last 6 weeks before weaning. The cost per calf averaged \$0.73 for all farms.

Similar information on feed for the steer enterprise is shown in table 15. Steer - feeding enterprises were built around a small grain-grazing program followed by drylot summer feeding. Operators of small farms tended to use a short feeding period for steers while those of the larger farms fed steers for a longer period. The average feeding period was 122 days on all farms. The longer feeding period accounted for the higher per head cost of feeding steers on large farms. Grain, particularly corn, and protein supplement made up 43 percent of the ration fed steers.

Feed cost per steer averaged \$27.19 for all farms. Grain accounted for 46 percent of the total feed cost per head, hay 25 percent, protein supplement 23 percent, and silage 6 percent. Each steer received approximately 22 pounds of feed per day; 7.7 pounds of grain, 6.7 pounds of silage, 5.6 pounds of hay, and 1.4 pound of silage, 5.6 pounds of hay, and 1.4 pounds of protein supplement. The large amount of roughage fed affected the level of finish on steers for all farms.

Labor Costs. — It was not possible to determine the total labor requirements for the beef enterprise. However, certain items of labor, such as time required for feeding, castrating, dehorning, branding and spraying, have been identified. Costs

of labor used in feeding, by size of farm and for all farms, are shown in table 16. The per hour labor cost is for unskilled or off-season labor, it averaged 35 cents. Apparently, there is only a small advantage to scale in labor efficiency in feeding cattle. For herds of any appreciable size, the labor cost for feeding any one class of livestock is largely determined by the length of the feeding period rather than by the number of cattle fed.

The time required to feed the breeding herd, steers, and calves averaged 6.52, 4.29, and 1.15 hours per day, respectively, for all farms. Labor costs for feeding each class of livestock per day averaged \$2.28 for the breeding herd, \$1.50 for steers, and \$0.40 for creep-feeding calves on all farms.

Table 15.—Type, amount, and value of feed fed per farm and per animal, by size of farm, for the steer enterprise, Yazoo-Mississippi Delta, 1957.

Item	Farm size (acres)		All farms
	Under 1,000	Over 1,000	
Protein supplement			
Amount — tons	0.7	3.7	2.9
Cost per farm — dollars	49	256	201
Concentrate			
Corn equivalent — bushels	151	551	444
Cost per farm — dollars	136	495	400
Roughage			
Hay — ton	.2	14.6	10.8
Cost — dollar	4	292	217
Silage — ton	—	17.9	12.9
Cost — dollars	—	72	52
Total cost per farm — dollars	189	1,115	870
Total cost per steer — dollars	11.12	30.14	27.19

Table 16.—Estimated quantities and cost of labor used to feed cattle, by size of farm, Yazoo-Mississippi Delta, 1957.

Item	Farm size (acres)		All farms
	Under 1,000	Over 1,000	
Breeding herd			
Length of feeding period (days)	108	111	111
Hours	704	724	724
Cost — dollars	246	253	253
Steers			
Length of feeding period (days)	113	125	122
Hours	485	536	523
Cost — dollars	170	188	183
Calves			
Length of feeding period (days)	183	192	189
Hours	210	221	217
Cost — dollars	73	77	76
Total cost — dollars	489	519	511

Table 17. — Summary of itemized annual direct operating costs for cattle per farm and per animal by farm size groups, Yazoo-Mississippi Delta, 1957.

Item	Farm size (acres)					
	Under 1,000		Over 1,000		All farms	
	Cost per item	Percentage of total	Cost per item	Percentage of total	Cost per item	Percentage of total
	Dollars	Percent	Dollars	Percent	Dollars	Percent
Permanent pasture	2,098	34	7,282	46	5,908	44
Temporary pasture ¹	477	8	996	6	859	7
Feed cost	1,887	31	4,552	29	3,847	29
Feed labor cost	489	8	519	3	512	4
Specialized equipment repair cost	43	1	93	1	80	1
Miscellaneous cost	980	16	1,966	13	1,715	13
Other labor cost	115	2	254	2	217	2
Total per farm	6,089	100	15,662	100	13,138	100
Cost per head	30.14	---	38.48	---	37.00	---

¹Includes a portion of establishment costs when harvested for grain and all costs when grazed only

Miscellaneous labor requirements for such jobs as castrating, dehorning, spraying, and branding are presented in appendix table 4. An average of 620 hours of labor for miscellaneous jobs were used per farm. Charges for this labor amounted to \$217.

Miscellaneous Costs. — Other relatively minor costs that contribute to the total include those for repairs to specialized equipment and such items as veterinary and medicine, spray material, salt, hauling, and fence repairs. (See appendix table 5).

An average of \$80 per farm was spent on the upkeep of specialized equipment used in the beef cattle enterprise. Repairs to the water system accounted for more than 50 percent of this amount.

Costs for such items as veterinary services and medicine, spray materials, salt, hauling costs, and fencing repairs varied widely among farms. These costs averaged over \$1,700 per farm and \$4.83 per animal.

Summary of Operating Costs.—Presented in table 17 are the total annual direct operating costs per farm, by item of expense, and the proportion of total costs represented by each item. Also shown are operating costs per head for the two size groups and for all farms.

Permanent pasture and feed costs comprise the major part of the direct operating costs for each farm size group and for all farms. The importance of permanent pasture costs becomes more apparent when its effect on cost per head is noted. Despite the fact that other operating costs are the same or proportionately higher on small farms, the low cost of pasture results in a lower operating cost per head on the smaller units. This is due to more intensive use of pastures, as indicated by higher stocking rates on the small farms. On small farms, an average of 2.4 acres per mature animal was grazed, on large farms 4.1 acres, and on all farms 3.8 acres per animal (appendix table 6). Compared with recommended rates, the stocking rate on permanent pasture is low for all farms, but it is especially low on large farms, and as a result the cost of this item is relatively high.

Feed costs represented the second largest item of expense. The cow-calf enterprise used practically all of the feed as a supplement to winter pasture or other standing roughage. Feed cost per animal and size of operation showed little relationship. There was indication that where such crop residues as cotton, corn, or soybeans were grazed during the winter, both permanent pasture costs and supple-

mental feed requirements were reduced significantly. This reduction is discussed more fully in the section on efficient beef enterprises.

Returns to the Beef Enterprise

Average returns per farm to the beef enterprise by class of animal are shown for each farm size group in table 18. As would be expected, calves accounted for the bulk of the returns. Steers were second in importance, and increases in inventory of the breeding herd ranked third. The smaller farms are more intensive than the larger ones and have a higher gross return per unit of land.

For a detailed breakdown of livestock inventories for all farms, see appendix tables 7, 8, and 9. Careful study and analysis of these detailed inventories give a clearer picture of the livestock operations in the area.

Total beef cattle numbers on the farms studied declined from 16,800 to 13,770, a decrease of 18 percent during 1957. Deaths accounted for 3.8 percent and sales for 14.2 percent of the total. Heavy liquidation of the beef enterprise was made to cover current operating losses incurred because of a poor cotton crop. The number of steers carried over and the number of heifer replacements fell sharply, accounting for a major part of the decrease in numbers. The calves from the previous year's crop (1956) generally transferred to the steer or replacement-

heifer category were sold along with the early-born calves of the 1957 crop. Brood-cow numbers fell slightly, accounting for 4.3 percent of the decrease. Cows of poor quality, as well as old or barren cows or both, were culled and sold. Calf numbers fell by only 2.2 percent. Culling and sales of nonbearing cows held in check the number of calves lost.

The total decrease in inventory values of beef cattle was not as high as the decrease in beef cattle numbers. The value and price of all classes of beef animals increased as livestock numbers throughout the country began to rise. Favorable weather in the West increased the demand for steers and replacement heifers. Steers increased in inventory value \$52.15 per head, calves \$27.69 per head, bulls \$44.22 per head, and cows \$3.65 per head. Replacement heifers declined in value \$1.50 per head. This resulted from the heavy sales of older heifers and their replacement by younger, lighter animals.

Returns to land and management were determined by subtracting interest on capital investment from returns above direct operating costs (table 19). In general, these returns are very low, indicating that, on the average, both pasture and herd management in the Delta are inadequate. Considering all costs, average returns are negative, and only on small operating units are returns to the enterprise positive.

In analyzing production costs, the im-

Table 18.—Gross returns to the beef enterprise per farm, by size of farm and class of livestock, Yazoo-Mississippi Delta, 1957¹.

Class of livestock	Farm size (acres)		All farms Dollars
	Under 1,000 Dollars	Over 1,000 Dollars	
Cows	88	1,015	770
Heifers	317	1,262	928
Bulls	-	-67	-49
Steers	1,119	2,364	2,174
Calves	6,931	13,063	11,359
Total	8,455	17,637	15,182

¹Includes sales and changes in inventory values.

Table 19.—Summarized costs and returns, beef cattle enterprises, Yazoo-Mississippi Delta, 1957.

Item	Farm size (acres)		All farms
	Under 1,000	Over 1,000	
	Dollars	Dollars	Dollars
Annual cost per farm:			
Permanent pasture	2,098	7,282	5,908
Temporary pasture	477	996	859
Feed	1,887	4,552	3,847
Labor ¹	604	773	729
Specialized equipment repair	43	93	80
Miscellaneous	908	1,966	1,715
Total	6,089	15,662	13,138
Gross returns per farm	8,455	17,637	15,182
Returns above direct costs:			
Per farm	2,366	1,975	2,044
Per mature animal	20.75	7.29	10.12
Per acre of pasture	8.63	2.17	2.69
Interest on capital investment	1,146	2,160	1,892
Building depreciation and repair	307	431	398
Total	1,453	2,591	2,290
Returns to land and management:			
Per farm	913	-616	-246
Per mature animal	8.00	-2.67	-1.22
Per acre of pasture	3.33	-.67	-.33

¹Does not include certain unidentifiable labor.

portance of permanent pasture and supplemental feed costs cannot be overemphasized. These two items make up more than two-thirds of the total operating cost. Any practice that would reduce permanent pasture requirements or supplemental feed costs, or both, would affect returns markedly.

Characteristics of Efficient Beef Enterprises

In an effort to ascertain the characteristics and practices followed by successful beef cattle producers, the 13 farms with the highest net returns per acre of pasture were chosen for more detailed analysis.

These farms contained an average of 2,126 acres; 1,319 acres of cropland, 462 acres of pasture, and 345 acres of woodland, homestead, etc. Only 22 percent of the total land on these farms was used for the beef enterprise compared with 33 percent for all farms. The beef enterprise consisted of 444 animals; 189 brood cows, 7 bulls, 11 heifers, 37 steers, 36 yearlings, and 164 calves.

Capital investment in the beef enterprise, excluding land, averaged \$50,460. Investment in beef animals represented a higher proportion of the total (70 percent) than was true for all farms. The lower investment in buildings, specialized equipment, and permanent fencing resulted from the use of several production practices not commonly found on all farms. As each practice is discussed, its effect on investment and costs is noted.

As indicated earlier, the fact that these farms are larger than the average had no apparent effect on costs associated with the beef enterprise.

There were no discernable differences in the level of livestock health and sanitation practices carried out on these farms as compared with all farms. However, the calf drop averaged 6 percent higher on the farms studied. This was due to the prevention of deaths rather than to larger numbers of births.

Pasture cost per animal was considerably lower on these farms, averaging \$19.36 for high-return farms and \$29.04 for all farms. Permanent pasture used

per mature animal averaged 2.2 acres as compared with 3.8 acres for all farms. Operators of nine of the high-return farms (70 percent) indicated that crop-residue grazing was a practical way to reduce both permanent pasture requirements and supplemental feed costs. This practice also lowered investment in fencing as acreages of permanent pasture were reduced.

The use of temporary pasture was somewhat more prevalent on farms with high beef yields, 3.4 compared with 1.8 acres per animal on other farms. A major part of the temporary grazing consisted of small grains that were later harvested for grain. In fact, this practice was twice as prevalent on farms having high beef yields.

Feed and feed labor costs were considerably lower on the more efficient farms. Less protein supplement and less hay were fed on these units. The feeding period was reduced from 111 to 89 days. This was due largely to the use of crop residues for the breeding herd. This practice also reduced the level of investment

for harvesting, storing, and handling the feed required for the herd.

Although repairs on specialized equipment were higher on the more efficient units, because of more intensive use of the equipment, miscellaneous costs appeared to be directly related to herd size.

Returns to the Beef Enterprise.—On the more efficient farms, gross returns averaged \$25,192. Calves accounted for \$14,980, or 59 percent, and steers for \$5,103, or 20 percent. Values of both cows and heifers increased, and that of bulls declined slightly.

Gross returns per calf or yearling averaged \$17 per head more than for all farms. Calves weighed more at sale date and brought higher prices. Cull brood cows from these farms sold for \$5.00 per head more than those from all farms.

Numbers of beef cattle on these farms declined 13 percent in 1957. Declines were noted in all classes except brood cows, which went up by 1 percent. The managerial decision to increase brood cows numbers no doubt resulted from the rel-

Table 20.—Summary of costs and returns, selected efficient beef cattle operations, Yazoo-Mississippi Delta, 1957

Item	13 farms	Average all farms
	Dollars	Dollars
Annual cost per farm:		
Permanent pasture	4,229	5,908
Temporary pasture	1,192	859
Feed	2,462	3,847
Labor ¹	706	729
Specialized equipment repair	85	80
Miscellaneous	2,145	1,715
Total	10,819	13,138
Gross returns per farm	25,192	15,182
Returns above direct costs:		
Per Farm	14,373	2,044
Per mature animal	58.91	10.12
Per acre of pasture	20.27	2.69
Interest on capital investment	2,145	1,892
Building depreciation and repair	453	398
Total	2,598	2,290
Returns to land and management:		
Per farm	11,775	-246
Per mature animal	48.26	- 1.22
Per acre of pasture	16.60	- .33

¹Does not include certain unidentifiable labor.

ative profitableness of the enterprise. Presumably, the heavier than usual marketings of other classes of animals could be associated with the poor cotton crop in 1957.

A summary of costs and returns on these farms is shown in table 20. Returns above direct operating costs and returns to land and management were considerably higher than those reported for all farms. The reduction in pasture costs and in feed and feed labor costs resulting from the use of crop residues materially affected the level of returns. Increases in gross returns were due to (1) proportionately larger calf crops, (2) heavier weights of calves at sale time, and (3) higher prices received for calves and steers.

Total costs per mature animal averaged \$54.68 on the more efficient farms and \$75.75 for all farms. Gross returns per mature animal averaged \$103.25 for these farms as compared with \$75.16 for all farms.

General Summary

The average beef cattle farm studied contained about 2,000 acres of land. This compares with an average size for all farms of 332 acres. About 55 percent of the total acreage was in cropland, 33 percent in pasture, and 12 percent in woods and other uses. The fact that pastures occupied a third of the total land is an indication of the importance of the beef cattle enterprise on these farms. However, it also indicates that livestock is still supplementary to crop production. Cotton, soybeans, and corn occupied 66 percent of the cropland, small grains 20 percent, and the rest was devoted to forage crops and miscellaneous uses.

The average farm studied had an investment of approximately \$27,000 in the beef enterprise exclusive of land. Cattle was the largest investment item, accounting for 61 percent of the total other than land. Buildings and fencing made up the bulk of the remainder.

A fall and winter calving program is widely accepted by beef producers in the area. Approximately 82 percent of the calf crop was dropped between October 1 and March 1.

The level of health and sanitation practices was somewhat higher than those found in other areas of the state. However, vaccinations for certain diseases are still below recommended standards.

Anaplasmosis and the combination of stillbirths and abortions were the major causes of death among mature animals and calves, respectively.

Pasture is the most important production factor associated with beef production. The high annual establishment and maintenance costs for pastures result from short pasture life coupled with high annual maintenance charges.

In 1957, the breeding herd received feed an average of 111 days. Hay, silage, and protein supplement account for the bulk of the feed used in the cow-calf program. Feed costs averaged \$16.85 per mature animal. An additional cost of \$2.28 per day was incurred in feeding the brood cow herd.

Permanent pasture and feed costs comprised the major portion of direct operating costs for each farm size group and for all farms. Compared with recommended rates, the stocking rate on permanent pasture was low on all farms and especially low on large farms. The more intensive use of pasture, as indicated by higher stocking rates, resulted in a lower operating cost per head on small farms.

Practically all of the feed was used by the cow-calf enterprise; it supplemented winter pasture or other standing roughage. When crop residues, such as cotton, corn, or soybeans, were grazed during the winter, both supplemental feed requirements and permanent pasture costs were reduced significantly.

Calf sales accounted for the greater part of all sales, with steers second in

importance. Total beef numbers in the area declined 18 percent in 1957 because of liquidation of animals and reduction in herd size to cover losses resulting from a poor cotton crop.

In general, net returns were low.

An analysis of the more efficient producers in the study showed that all of these operators used coastal bermuda pasture, crop residues, or both. These farms had less land in permanent pasture and a shorter winter feeding period. Capital investment in buildings, fencing, and specialized equipment was lower than for all farms. Seventy percent of the operators of these farms in-

dicated the use of crop-residue grazing as a means of reducing permanent pasture and supplemental feed costs. Calves produced on the 13 more efficient farms were heavier at sale time and brought more per pound than those produced on the other farms studied. These calves brought an average of \$17.00 per head more than the average for those produced on all farms.

The importance of permanent pasture and supplemental feed costs cannot be overemphasized. These items made up more than 66 percent of total operating costs on all farms and 62 percent on the more efficient units.

APPENDIX

Table 1.—Modal pasture composition per mature animal, cow-calf enterprise, Yazoo-Mississippi Delta, 1957

Pasture type	Acreage per animal	Cost per unit
	Acres	Dollars
Fescue	1.80	16.74
Common bermuda	.60	5.06
Johnson	.37	1.51
Dallis	.81	9.06
Native	.22	2.41
Total	3.80	34.79

Table 2.—Labor power, and equipment cost per acre for establishment of permanent and temporary pastures, Yazoo-Mississippi Delta, 1957

Pasture type	Labor ¹		Power ¹		Equipment ¹	
	Hours	Dollars	Hours	Dollars	Hours	Dollars
Fescue	2.83	1.70	2.53	2.27	2.53	1.91
Common bermuda	2.93	1.76	1.50	1.35	1.50	1.12
Johnson	2.71	1.63	2.52	2.27	2.52	1.90
Dallis	2.44	1.46	1.94	1.75	1.94	1.45
Costal bermuda	13.29	7.97	3.05	2.74	3.05	2.29
Fescue clover	3.23	1.94	1.62	1.46	1.62	1.22
Fescue wild winter peas	2.18	1.31	1.92	1.73	1.92	1.44
Small grains ⁴	2.18	1.31	1.92	1.73	1.92	1.44
Sudan	2.95	1.77	2.32	2.09	2.32	1.74
Millet	2.17	1.30	2.10	1.89	2.10	1.57
Lespedeza	2.20	1.32	2.10	1.89	2.10	1.57
Crop residue	1.50	.90	.33	.30	.33	.25
	1.60	5.56	.40	.34	.40	.26

¹Wage rate \$0.60 per hour, power rate \$0.90 per hour, equipment rate \$0.75 per hour.

²Hand sprigged.

³Machine sprigged.

⁴Includes oats, rye grass, and wheat alone and in combinations.

⁵Off-season labor at \$0.35 per hour.

Table 3.—Labor, power, and equipment cost per acre for maintenance of permanent pasture, Yazoo-Mississippi Delta, 1957

Pasture type	Labor		Power		Equipment	
	Hours	Dollars	Hours	Dollars	Hours	Dollars
Fescue	1.28	0.77	0.84	0.76	0.84	0.63
Common bermuda	1.37	.82	1.08	.98	1.08	.81
Johnson	1.04	.62	1.04	.94	1.04	.78
Dallis	1.13	.68	.96	.86	.96	.72
Coastal bermuda ¹	1.53	.92	1.32	1.19	1.32	.99
Fescue clover	.88	.53	.58	.52	.58	.44
Fescue wild winter peas	.88	.53	.58	.52	.58	.44

¹Same for hand and machine sprigged.

Table 4.—Other labor costs, by size of farm, Yazoo-Mississippi Delta, 1957.

Farm size	Hours per farm ¹		Cost per farm ²
	Acres	Hours	Dollars
Under 1,000		328	115
Over 1,000		725	254
All farms		620	217

¹Includes time required for treating sick and injured animals castrating, dehorning, spraying, and herd checking.

²Prevailing wage rate in area \$0.35 per hour.

Table 5.—Miscellaneous expenses, beef cattle enterprise, Yazoo-Mississippi Delta, 1957.

Item	Average cost* per head
Veterinary and medicine	1.16
Spray material	.19
Feed grinding	.06
Salt and minerals	.60
Marketing charge	.52
Taxes	.58
Insurance on buildings	.21
Fence repair	.66
Truck	.66
Automobile	.19
Total	4.83

Table 6.—Stocking rate on permanent pasture by size groups, Yazoo-Mississippi Delta, 1957

Item	Farm size (acres)		
	Under 1,000	Over 1,000	All farms
Number animals ¹	97	194	1.70
Acreage of permanent pasture	220	795	645
Acreage of permanent pasture per animal	2.4	4.1	3.8

¹Mature animals in the breeding herd. Steers did not utilize permanent pasture.

Table 7.—Beef cattle inventory, farms under 1,000 acres, Yazoo-Mississippi Delta, 1957.

Item	Cows	Heifers	Bulls	Steers	Cavles
Start					
Number	78.1	5.3	3.7	17.6	33.6
Value	13,125	633	1,856	2,188	1,562
Purchase					
Number	11.8	1.0	.4	-----	1.4
Value	1,811	172	200	-----	56
Born					
Number	-----	---	---	-----	50.7
Sale					
Number	19.0	-----	0.3	15.6	60.3
Value	2,293	-----	105	2,498	6,756
In transfer					
Number	5.9	2.2	-----	-----	-----
Value	900	194	-----	-----	-----
Out transfer ¹					
Number	-----	5.9	-----	-----	2.2
Value	-----	900	-----	-----	194
Death					
Number	1.8	.1	-----	.3	3.2
Value	254	11	-----	32	---
End					
Number	75.0	2.5	3.8	1.7	20.0
Value	12,541	222	1,950	809	1,599

¹Same as sales.

Table 8.—Beef cattle inventory, farms over 1,000 acres, Yazoo-Mississippi Delta, 1957

Item	Cows	Heifers	Bulls	Steers	Cavles
Number	162	21	7	30	66
Value	24,264	2,204	2,911	3,092	3,588
Purchase					
Number	15	3	1	3	8
Value	2,387	284	471	313	339
Born					
Number	---	---	---	---	101
Sales					
Number	37	5	2	29	95
Value	5,218	479	571	5,149	10,724
In transfer					
Number	13	8	---	3	---
Value	1,638	846	---	281	---
Out transfer ¹					
Number	-----	13	-----	-----	11
Value	-----	1,314	-----	-----	1,104
Death					
Number	4	²	³ ---	⁴ ---	5
Value	597	22	114	20	---
End					
Number	149	14	6	7	64
Value	22,448	1,596	2,744	616	5,136

¹Same as sales.²0.20 animals per farm.³0.30 animals per farm.⁴0.24 animals per farm.

Table 9.—Beef cattle inventory, all farms, Yazoo-Mississippi Delta, 1957.

Item	Cows	Heifers	Bulls	Steers	Calves	Total
Start						
Number	9,510	1,170	422	1,798	3,900	16,800
Value	1,449,462	125,201	178,950	193,969	207,538	2,155,120
Purchase						
Number	930	184	61	162	432	1,769
Value	151,962	17,294	27,175	15,643	17,930	230,004
Born						
Number	—	—	—	—	5,980	—
Sale						
Number	2,216	247	99	1,733	5,853	10,148
Value	302,240	23,974	30,465	302,413	653,605	1,312,697
In transfer						
Number	764	463	—	135	—	1,362
Value	98,100	45,800	—	14,060	—	157,960
Out transfer ²						
Number	—	764	—	—	598	1,362
Value	—	97,800	—	—	58,690	156,490
Death						
Number	255	11	16	18	1,331	631
Value	34,427	1,325	5,709	1,586	—	43,047
End						
Number	8,733	795	368	344	3,530	13,770
Value	1,362,857	83,802	172,325	55,049	285,575	1,959,608

¹Does not include stillbirths (180).²Same as sales.

Table 10.—Feed and permanent pasture costs per head resulting from the utilization of crop residues for the cow-calf enterprise by farm size group, Yazoo-Mississippi Delta, 1957.

Item	Farm (size acres)					
	Under 1,000		Over 1,000		All farms	
	Crop residues	Permanent pasture	Crop residues	Permanent pasture	Crop residues	Permanent pasture
Number of farms	7	11	20	127	27	138
Acres crop residues per farm	287	—	452	—	409	—
Acres permanent pasture per farm	316	173	695	966	597	753
Number animals per farm	283	141	379	309	354	264
Acres permanent pasture per animal	1.1	1.2	1.8	3.1	1.7	2.9
Days fed supplemental feed:						
Breeding herd	84	123	105	117	100	118
Calves	212	174	100	159	129	163
Cost of feed fed	1,586	2,164	3,082	4,559	3,694	3,916
Feed cost per head	5.60	15.32	8.13	14.75	7.61	14.83
Pasture cost per head	10.08	10.99	16.49	28.40	15.57	26.56
Total specified cost per head	15.68	26.31	24.62	43.15	23.18	41.39

¹Three farms eliminated from analysis because of abnormal feeding practices.