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# Economic Feasibility of Producing Yearling Beef Cattle in Alabama



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# SUMMARY

The primary purpose of this study was to determine the economic feasibility of yearling (stocker) beef cattle production. Data were obtained from 31 producers by personal interviews in late summer and fall of 1963. A majority of the producers were located in central Alabama.

Records were grouped according to production cost per hundredweight. The three groups considered were for producers who had costs less than $22.00, $22.00 to $28.99, and $29.00 and over per hundredweight of beef cattle sold. These groups were referred to as the low, middle, and high cost groups. The low cost group had the largest number of brood cows. Stocker or yearling production was most prevalent in the low and middle cost groups.

Total investment in land used for beef cattle, cattle, and buildings averaged $129,218 per farm. Cattle accounted for 26 per cent, land 69 per cent, and buildings 5 per cent of the total. Investment per animal unit was highest for farms with better grazing programs. A higher value per acre for grazing land accounted for this relationship.

Adjusted total cost per hundredweight of beef cattle (calves and yearlings) sold was $25.94. This cost reflected purchases of animals, less breeding stock sales, and changes in the inventory. Pasture and feed costs were the most important of all costs, making up 39 and 30 per cent of the total, respectively. Interest on cattle accounted for 11 per cent of total cost and was followed closely by building, equipment, and fencing costs that totaled 10 per cent. Labor costs were 4 per cent of total cost

per hundredweight of cattle sold, with marketing and miscellaneous costs each accounting for 3 per cent of total cost.

The low cost group sold 80,916 pounds of cattle per farm with an adjusted total cost of $18.08 per hundredweight. The middle cost group sold 79,970 pounds of cattle per farm at a total adjusted cost of $25.10 per hundredweight. The high cost group sold 62,314 pounds of cattle per farm. The low cost producer group was the only one to average a positive net return above all expenses excluding a land charge. The low cost producer group of farmers used less than half the acres per beef animal unit as did the high cost group. For all groups, an average of 4.4 acres was required per beef animal unit.

On the basis of information obtained through the survey and various secondary sources, four basic programs were developed and compared with a recent study of suggested improvements for beef calf production. Each program varied with type of feed fed and whether yearlings were raised or bought.

Net return to land and management was higher for production of beef yearlings than calves for the same land area. For a 100-brood cow unit in which yearlings were produced as compared with calves, net returns were also higher for yearlings. Still higher returns relative to capital investment were possible with buy-sell programs involving steers.

Potential developments in the production of yearling cattle will in a large measure depend on alternative opportunities for resources that can be used for production of feed supplies, primarily pastures and roughages, as well as area differences in demand for feeder cattle. Transportation rates on both grain and cattle are important in determining the latter. Reductions in rail transportation rates point to potential gains for Alabama in beef production.

# ECONOMIC FEASIBILITY of PRODUCING YEARLING BEEF CATTLE in ALABAMA*

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## INTRODUCTION

A major part of the cattle industry in Alabama is geared to the production of light weight calves. Based on a recent study,[1] a majority of these calves are shipped out of state for growth and eventual feedlot finishing. A demand exists for heavier weight feeder calves and Alabama cattlemen are not meeting this demand.

Growing and feeding cattle to heavier weights involves additional costs, improved management, willingness to assume certain risks, and a greater knowledge of markets and marketing. Many producers are not aware of the production and market requirements nor of the opportunities that exist.

The objectives of this study were as follows:

(1) To determine the resources used in producing yearling beef[2] cattle either raised or purchased,

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1/ J. R. Meadows and M. J. Danner, Movement of Cattle and Calves Through Alabama Auction Markets, Bul. 360, Ala. Agr. Expt. Sta., Auburn University, 1965.

2/ The term "yearling beef cattle" is synonymous with stocker cattle as used in this report.

(2) To determine the costs and returns as well as present level of management practices used by Alabama cattlemen in producing yearling beef cattle,

(3) To compare the returns from producing beef calves and yearlings, and,

(4) To evaluate the feasibility of producing yearling beef cattle in given farm situations.

## How the Study Was Made

Data used in the study were obtained from producers by personal interview in late summer and fall of 1963. The data were applicable for the previous 12 months of farm operations.

Although efforts were made to locate yearling beef cattle producers in all areas of the State, most were found in central Alabama. Records that provide basic data for this study were obtained from 22 farmers in central, 7 in northern and 2 in southern Alabama. With a limited number of records in northern and southern Alabama, data are not presented by geographical areas.

Information in most cases was estimated by the cattlemen interviewed. Very few had production or other records.

For a description of method and procedure used in calculating costs, see Appendix A. After total cost per hundredweight of beef cattle sold was calculated, records were placed in three groups. These were low (less than $22.00 per hundredweight), medium ($22.00 to $28.99 per hundredweight), and high ($29.00 per hundredweight and over). Most of the information is presented by cost groups.

## YEARLING BEEF PRODUCERS

The average age of yearling beef producers was 51 years, Table 1. As an average, they reported 22 years of experience in cattle production.

Almost three-fourths reported sources of income other than from beef cattle production. Other sources of income were from such activities as teaching, selling timber, being a postmaster, or operating a general store.

Table 1. Average Age, Years Experience in Cattle Production and Percentage of 31 Yearling Beef Producers Having Sources of Income Other Than Farming, Alabama, 1962

| Group | Operators | Average age of operators | Experience in cattle production | Reported other sources of income |
|---|---|---|---|---|
| | Number | Years | Years | Per cent |
| Low cost..... | 9 | 52 | 22 | 78 |
| Middle cost..... | 13 | 50 | 21 | 69 |
| High cost..... | 9 | 52 | 26 | 78 |
| Total or average.... | 31 | 51 | 22 | 74 |

## THE CATTLE FARMS

Information in this section includes material on size of farms, land use, cattle numbers, their value, and total investment in the beef enterprise as reported by the 31 producers.

### Land Use

The average size farm of the yearling beef producers was 1,475 acres, Table 2. Cropland accounted for 16 per cent of all land in the sample

farms. Twenty-eight per cent of all land was improved pasture and 14 per cent unimproved pasture. Woodland, including that pastured, accounted for 38 per cent of total land. The remaining 4 per cent was for farmstead and miscellaneous uses.

Production of hay accounted for 36 per cent of the use of cropland. Cotton and temporary pasture each accounted for 24 per cent of cropland, while corn accounted for 11 per cent.

Table 2. Land Use and Major Crops Per Farm, 31 Yearling Beef Producers, Alabama, 1962

| Item | Cost group: Less than $22.00 per cwt. | $22.00 to $28.99 per cwt. | $29.00 per cwt. and over | Average all groups |
|---|---|---|---|---|
| Number of farms | 9 | 13 | 9 | 31 |
| Acres used for beef | 496 | 699 | 827 | 677 |
| Acres operated | 841 | 1,664 | 1,835 | 1,475 |
| Cropland[1/] | 227.1 | 149.5 | 363.7 | 234.2 |
| Cotton | .8 | 39.3 | 136.0 | 56.2 |
| Corn | 4.9 | 26.2 | 47.9 | 26.3 |
| Oats | -- | .6 | -- | .3 |
| Wheat | -- | -- | 7.8 | 2.3 |
| Legume hay | 50.0 | 8.0 | -- | 17.9 |
| Other hay | 88.3 | 31.8 | 96.7 | 67.0 |
| Temp. winter pasture | 70.2 | 36.6 | 67.7 | 55.4 |
| Temp. summer pasture | .9 | .5 | -- | .5 |
| Other crops | .8 | 4.6 | -- | 2.2 |
| Silage | -- | -- | 8.3 | 2.4 |
| Improved open permanent pasture | 375.9 | 414.1 | 439.2 | 410.3 |
| Unimproved open permanent pasture | 44.4 | 224.7 | 359.6 | 211.5 |
| Woods pasture | 100.7 | 209.8 | 353.4 | 219.8 |
| Woodland | 39.3 | 630.5 | 239.3 | 345.3 |
| Farmstead and other[2/] | 53.6 | 35.4 | 79.8 | 53.8 |

1/ Acres of various crops do not necessarily add to cropland total as a result of some land being double cropped.

2/ Includes roads, ditches, homestead, idle land, gardens, and other miscellaneous uses.

## Cattle Numbers and Value

The average number of brood cows for all groups was 98 with an average value of $150 per head, Table 3. The low cost group had the largest average number of brood cows and the same average number of bulls as the middle and high cost groups. The average total value of brood cows for all groups was $14,700. Raised calves under 1 year of age averaged $73 per head. Raised yearlings were more prevalent in the low cost group.

The middle cost group had an average of $13,050 invested in purchased yearlings. Also, the middle cost group was the only group that purchased calves.

Other livestock enterprises on the beef cattle farms were relatively unimportant. Only 4 out of 31 farmers interviewed reported hogs.

## Total Investment in Beef Enterprises

Total per farm investment allocated to beef, excluding machinery and equipment for the sample farms, was $129,218, Table 4. Cattle accounted for 26 per cent, land 69 per cent, and buildings 5 per cent. Land for beef was a higher percentage of total investment for the high cost than for the other two groups. Total per acre investment was about the same for low and high cost groups. Per hundredweight of cattle sold, low cost producers had almost half the total investment of the high cost group. Low cost producers had $83 invested in land per hundredweight of cattle sold as compared with $198 for high cost producers. Low cost producers also had about 30 per cent less investment in cattle per hundredweight of cattle sold than high cost producers.

Table 3. Average Number and Value of Beef Cattle on Farms by Cost Groups, 31 Yearling Beef Producers, Alabama, 1962

| Item | Cost group: Low | | | Middle | | | High | | | Average all groups | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dollar value | | | Dollar value | | | Dollar value | | | Dollar value | |
| | No. | Per head | Per farm | No. | Per head | Per farm | No. | Per head | Per farm | No. | Per head | Per farm |
| Farms..... | 9 | | | 13 | | | 9 | | | 31 | | |
| Raised | | | | | | | | | | | | |
| Cows..... | 111 | 135 | 14,985 | 86 | 154 | 13,244 | 103 | 160 | 16,480 | 98 | 150 | 14,700 |
| Bulls..... | 4 | 298 | 1,192 | 4 | 405 | 1,620 | 4 | 380 | 1,520 | 4 | 367 | 1,468 |
| Replacements..... | 9 | 109 | 981 | 16 | 119 | 1,904 | 19 | 154 | 2,926 | 15 | 126 | 1,890 |
| Calves..... | 46 | 72 | 3,312 | 53 | 66 | 3,498 | 66 | 83 | 5,478 | 55 | 73 | 4,015 |
| Yearlings..... | 29 | 82 | 2,378 | 10 | 112 | 1,120 | 19 | 132 | 2,508 | 18 | 109 | 1,962 |
| Purchased | | | | | | | | | | | | |
| Yearlings..... | 62 | 109 | 6,758 | 87 | 150 | 13,050 | 38 | 125 | 4,750 | 66 | 131 | 8,646 |
| Calves..... | -- | -- | -- | 5 | 97 | 485 | -- | -- | -- | 2 | 97 | 194 |
| Total investment..... | | | 29,606 | | | 34,921 | | | 33,662 | | | 32,875 |

Table 4. Average Investment in the Beef Enterprise per Farm, per Acre, and per Hundredweight of Cattle Sold, 31 Yearling Beef Producers, Alabama, 1962

| Item | Cost group: Less than $22.00 per cwt. | Cost group: $22.00 to $28.99 per cwt. | Cost group: $29.00 per cwt. and over | Average all groups |
|---|---|---|---|---|
| Number of farms..... | 9 | 13 | 9 | 31 |
| Per farm | | | | |
| Cattle..... | $ 29,606 | $ 34,921 | $ 33,662 | $ 32,875 |
| Land for beef..... | 67,510 | 82,804 | 123,587 | 90,204 |
| Buildings for beef. | 3,501 | 6,480 | 8,283 | 6,139 |
| Total..... | $100,617 | $124,205 | $165,532 | $129,218 |
| Per acre | | | | |
| Cattle..... | $ 60 | $ 50 | $ 41 | $ 49 |
| Land for beef..... | 136 | 118 | 149 | 133 |
| Buildings for beef. | 7 | 9 | 10 | 9 |
| Total..... | $ 203 | $ 177 | $ 200 | $ 191 |
| Per cwt. of cattle sold | | | | |
| Cattle..... | 36.90 | 43.72 | 54.40 | 44.84 |
| Land for beef..... | 83.43 | 103.54 | 198.33 | 125.22 |
| Buildings for beef. | 4.33 | 8.10 | 13.29 | 8.51 |
| Total..... | $124.66 | $155.36 | $266.02 | $178.57 |

General purpose barns were the most common type of service building. They were reported on 94 per cent of all farms in the sample. Six per cent of the farmers reported no barns.

## COSTS AND RETURNS

In this analysis, cost factors were divided into noncash and cash expenses. Noncash expenses included budgeted pasture and hay cost, building, fencing, water, feed and hauling costs, as well as interest on investment in cattle. Cash expenses included the cost of fertilizer, purchased feed, marketing, medical and veterinarian services and supplies, and labor excluding buying and selling labor.

### Major Cost Items

Total cost per hundredweight of beef cattle (yearlings and calves) sold averaged $25.94, Table 5. This cost per hundredweight reflected purchases of animals, breeding stock sales, and changes in the inventory. The low cost group had an average cost of $18.08 per hundredweight of cattle sold.

Pasture and feed costs were the most important of all costs making up 39 and 30 per cent, respectively, for all groups. Interest on cattle accounted for 11 per cent of total cost and was followed closely by building, equipment, and fencing costs that made up 10 per cent. Labor costs were 4 per cent of total cost per hundredweight of beef sold, with marketing and miscellaneous costs each accounting for 3 per cent of total cost.

Nine producers had costs less than $22.00 per hundredweight of beef animals sold, 13 producers had costs from $22.00 to $28.99 per hundredweight, and 9 producers had costs of $29.00 or greater per hundredweight.

Table 5. Itemized Cost Per Hundredweight of Beef Animals Sold. 31 Yearling Beef Producers, Alabama, 1962.

| Item | Cost group: Less than $22.00 per cwt. | $22.00 to $28.99 per cwt. | $29.00 per cwt. and over | Average all groups |
|---|---|---|---|---|
| Number of farms | 9 | 13 | 9 | 31 |
| Average acres used for beef per farm | 496 | 699 | 827 | 677 |
| Cost per cwt. | | | | |
| Pasture | $ 5.46 | $ 6.88 | $13.67 | $ 8.07 |
| Raised hay | 2.01 | 1.21 | 3.14 | 1.92 |
| Purchased hay | .01 | .46 | .61 | .35 |
| Grain | 1.09 | 1.60 | 4.26 | 2.08 |
| Protein | 1.16 | 1.33 | 1.73 | 1.38 |
| Miscellaneous feed | .72 | .11 | .83 | .47 |
| Hauling to market | .12 | .10 | .19 | .12 |
| Commission and yardage | .63 | .31 | .39 | .43 |
| Building | .43 | .81 | 1.33 | .82 |
| Fencing | .56 | .90 | 1.67 | 1.02 |
| Medical and veterinary | .16 | .12 | .31 | .18 |
| Water | .04 | .04 | .07 | .05 |
| Property tax | .21 | .30 | .45 | .31 |
| Labor (excl. buying & selling) | .58 | .70 | .85 | .70 |
| Labor (buying & selling) | .06 | .11 | .06 | .08 |
| Interest on breeding stock | 1.47 | 1.25 | 2.26 | 1.56 |
| Interest on market stock | .40 | 1.08 | .65 | .76 |
| Feed processing | .18 | .13 | .28 | .18 |
| Subtotal 1/ | 15.39 | 17.44 | 32.75 | 20.48 |
| Less breeding stock sales and adjustment for change in inventory | -1.82 | .17 | -9.28 | -2.12 |
| Plus purchases | 4.51 | 7.51 | 14.21 | 8.18 |
| Adjusted total cost 1/ | 18.08 | 25.10 | 37.68 | 25.94 |
| Per cwt. of beef sold | | | | |
| Pasture fertilizer expense | 3.83 | 3.88 | 4.66 | 3.74 |
| Hay fertilizer expense | .84 | .52 | .77 | .61 |
| Total fertilizer expense | 4.67 | 4.40 | 5.43 | 4.35 |

1/ Excludes land charge.

This cost per hundredweight of cattle sold did not include a land charge.

The average total cost for the $29.00 or more per hundredweight group was 53 per cent higher than that for the group with costs less than $22.00 per hundredweight. The cost difference was because of higher pasture and feed costs. Also, building, fencing, medical and veterinary, property taxes, labor, and interest on breeding stock costs were considerably higher than average for the high cost group. Purchases of beef animals that were on hand at end of the year and included in ending inventory at less than purchase price also contributed to relatively high costs.

Feed. The total cost of hay, grain, protein and miscellaneous feed per hundredweight of cattle marketed averaged $6.20 for all groups. Concentrates (grain and protein) made up 56 per cent of this feed cost per hundredweight and hay made up 37 per cent. Miscellaneous feeds and silage made up the remaining part.

Corn was the most important source of concentrates. An average of 60.9 pounds was fed per hundredweight of cattle sold for all groups, Table 6. Cottonseed meal was the next most important source of concentrate feed, averaging 23.8 pounds per hundredweight of cattle sold. Mixed feed, which included oats, grain sorghum, and barley, averaged 14.7 pounds fed per hundredweight of cattle sold. Commercial supplement and molasses for the average of all groups amounted to 19 pounds per hundredweight of cattle sold.

Mixed hay was the major roughage fed by all groups. An average of 127.1 pounds of mixed hay was fed per hundredweight of cattle sold followed by an average of 118.7 pounds of grass hay. Of the different types of hay, legume hay was lowest in average amount fed. Silage was

Table 6. Kind and Quantity of Feed Fed per Hundredweight of Cattle Sold, 31 Yearling Beef Producers, Alabama, 1962

| Item | Unit | Cost group: Less than $22.00 per cwt. | Cost group: $22.00 to $28.99 per cwt. | Cost group: $29.00 per cwt. and over | Average all groups |
|---|---|---|---|---|---|
| Number of farms | | 9 | 13 | 9 | 31 |
| Concentrate | | | | | |
| Cottonseed meal.. | Lb. | 11.3 | 24.7 | 38.5 | 23.8 |
| Commercial supplement..... | Lb. | 19.2 | 11.4 | 8.2 | 13.6 |
| Corn..... | Lb. | 41.9 | 59.1 | 88.8 | 60.9 |
| Molasses..... | Lb. | 12.6 | .4 | 5.5 | 5.4 |
| Mixed feed 1/..... | Lb. | -- | 2.5 | 57.1 | 14.7 |
| Total | | 85.0 | 98.1 | 198.1 | 118.4 |
| Roughage | | | | | |
| Grass hay..... | Lb. | 72.0 | 118.5 | 179.7 | 118.7 |
| Mixed hay..... | Lb. | 167.0 | 37.9 | 240.7 | 127.1 |
| Legume hay..... | Lb. | -- | 34.6 | 3.6 | 16.3 |
| C. S. hulls..... | Lb. | 12.4 | 1.3 | -- | 4.5 |
| Peanut hulls..... | Lb. | 3.3 | -- | -- | 1.0 |
| Total | | 254.7 | 192.3 | 424.0 | 267.6 |
| Silage..... | Lb. | -- | -- | 2.3 | .6 |
| Miscellaneous 2/.... | Lb. | 3.3 | 4.4 | 16.0 | 6.0 |

1/ Includes oats, grain sorghum, and barley.
2/ Includes salt and minerals.

fed on only one farm, which was in the high cost group.

The $5.58 difference in hay, grain, protein and miscellaneous feed cost per hundredweight between the low and high cost groups was primarily the result of feeding larger amounts of concentrates per hundredweight of cattle sold. Concentrate costs accounted for $3.48 of the difference between the low and high cost groups. Corn was the major grain fed.

Harvested forage, grain, protein, and miscellaneous feed costs per hundredweight accounted for 14 per cent of the difference between the middle and low cost groups and 32 per cent of the difference between the low and high cost groups. These feed costs per hundredweight were highest for the highest cost group of farmers who had the most improved pasture.

Pasture. The total cost of pasture per hundredweight of cattle marketed averaged $8.07. Between the low and high cost groups, pasture cost difference accounted for 47 per cent of the overall difference in total cost per hundredweight. The difference in pasture costs per hundredweight between the low and middle cost group accounted for 69 per cent of the difference in total cost per hundredweight.

The distribution between primarily native pastures and other grass indicated strong reliance on improved pastures. Improved pastures were those that were established. They consisted of grasses that are not native to Alabama. Almost 64 per cent of the pasture land in the low cost group was composed of improved pasture or improved pasture and clovers.

The low cost producers used only 0.6 acre of land for each hundredweight of beef sold as compared with 0.9 acre by the middle cost group,

and 1.6 acre by the high cost group. Low and middle cost producers also spent less for pasture fertilizer per hundredweight of cattle sold than did high cost producers. The overall higher pasture cost per hundredweight for the middle and high cost groups was attributed to lower stocking rates per acre, higher fertilizer costs per acre, and more expensive pasture crops.

Fencing. The low cost group had a fencing cost of $.66 per hundredweight of cattle sold as compared with $1.00 per hundredweight for the middle and $1.67 per hundredweight of cattle sold for the high cost group. Differences among cost groups were mainly because of differences in stocking rates.

The high cost group of farms used an average of 6.1 acres of land per beef animal unit[3/] as compared with 4.3 and 2.8 acres, used by the middle and low cost groups respectively, Table 7. Apparently, animal carrying capacity of pasture on the high cost farms was low or operators failed to utilize forage available. The high cost farmer group, as an average, used twice as much permanent pasture per animal unit as did the low cost group.

Labor. Labor costs were based on man hours of labor used as reported by farmers. The low cost group had an average labor cost of $.64 per hundredweight of cattle sold, while $.81 and $.91 were the labor costs per hundredweight of the middle and high costs groups, respectively.

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3/ An animal unit is defined as follows: one cow or one bull equals one unit; one yearling or replacement heifer equals three-fourths a unit; one calf equals one-half unit.

Table 7. Total Number of Beef Animal Units Per Farm and Acres of Pasture per Animal Unit, 31 Yearling Beef Producers, Alabama, 1962

| Item | Cost group: Less than $22.00 per cwt. | Cost group: $22.00 to $28.99 per cwt. | Cost group: $29.00 per cwt. and over | Average all groups |
|---|---|---|---|---|
| Number of farms | 9 | 13 | 9 | 31 |
| Number of beef animal units per farm: | | | | |
| Raised | 166.5 | 136.0 | 168.5 | 154.2 |
| Purchased | 46.5 | 67.8 | 28.5 | 50.5 |
| Total | 213.0 | 203.8 | 197.0 | 204.7 |
| Number of acres per beef animal unit: | | | | |
| Improved open permanent pasture | 1.8 | 2.0 | 2.2 | 2.0 |
| Unimproved open permanent pasture | .2 | 1.1 | 1.8 | 1.0 |
| Woods pasture | .5 | 1.0 | 1.8 | 1.1 |
| Temporary pasture 1/ | .3 | .2 | .3 | .3 |
| Total | 2.8 | 4.3 | 6.1 | 4.4 |

1/ Majority was winter pasture.

Interest. Interest on investment in beef animals for the low cost group per hundredweight of cattle sold was $1.87. Interest costs for the middle and high cost groups were $2.33 and $2.91 per hundredweight of cattle sold, respectively. The average interest cost for all groups was $2.32 or 9 per cent of the adjusted total cost.

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

| Cost group | Land charge per hundredweight of cattle sold |
|---|---|
| Low | $3.75 |
| Middle | 5.05 |
| High | 6.67 |

Since appreciation in dollar value of land in most cases would probably equal or exceed a land charge, no land charge was made in calculating the cattle costs.

Market values for land used in beef production were relatively high on many farms. Several yearling beef producers reported that the high value of land resulted from location relative to cities or urban developments.

## Returns

The low cost group sold an average of 80,916 pounds of cattle per farm or 163 pounds per acre of land used for beef, Table 8. The middle cost group sold an average of 79,970 pounds of cattle per farm or 114 pounds per acre, while the high cost group sold an average of 62,314 pounds of cattle or only 75 pounds per acre. Thus low cost producers averaged selling more than twice as much cattle per acre as those in the high cost category.

Net Returns. Excluding a charge for land, 8 of the 9 low cost producers, 3 of the 13 middle cost producers, and none of the high cost producers had a positive net return to land and management. The middle cost producers who received a positive return to land and management reported selling yearling cattle at an average price of $28.35 per hundredweight. Only three low cost producers had a positive return to land and management after land was charged at 5 per cent of its fair market value.

Table 8. Net Return Per Farm as Reported by 31 Yearling Beef Cattle Producers, Alabama, 1962

| Item | Cost group: Less than $22.00 per cwt. | Cost group: $22.00 to $28.99 per cwt. | Cost group: $29.00 per cwt. and over | Average all groups |
|---|---|---|---|---|
| Number of farms | 9 | 13 | 9 | 31 |
| Acres used for beef per farm | 496 | 699 | 827 | 677 |
| Market cattle sold per farm, cwt.[1] | 809 | 800 | 623 | 751 |
| Average cost per cwt. of market cattle sold[2] | $ 18.08 | $ 25.10 | $ 37.68 | $ 25.94 |
| Cash receipts per farm | | | | |
| Market cattle sales[1] | $16,798.18 | $18.289.05 | $14,161.90 | $16,658.01 |
| Breeding stock sales | 3,844.44 | 1,419.00 | 544.78 | 1,869.35 |
| Inventory change | -2,375.56 | -1,542.31 | 5,203.78 | 174.32 |
| Total credits per farm | $18,267.05 | $18,165.74 | $19,910.46 | $18,701.68 |
| Expenses per farm | | | | |
| Cash expenses[3] | $ 6,104.03 | $ 7,100.55 | $10,474.48 | $ 7,790.77 |
| Noncash expenses | 6,345.32 | 6,846.22 | 9,930.63 | 7,596.27 |
| Purchases | 3,645.89 | 6,006.08 | 8,855.44 | 6,148.10 |
| Total expenses per farm | $16,095.24 | $19,952.85 | $29,260.55 | $21,535.14 |
| Net return above cash expenses per farm | $12,163.02 | $11,065.19 | $ 9,435.98 | $10,910.91 |
| Net return above cash expenses per cwt. of market cattle sold | $ 15.03 | $ 13.83 | $ 15.15 | $ 14.53 |
| Net return above total expenses per farm[2] | $ 2,171.81 | $-1,787.11 | $-9,350.09 | $-2,833.46 |
| Net return above total expenses per cwt. of market cattle sold[2] | $ 2.68 | $ -2.23 | $ -15.01 | $ -3.77 |

1/ Includes home consumption.

2/ Excludes land charge.

3/ Does not include cash expenses for tractor and machinery use, buildings and fences.

The low cost group experienced a net return of $2.68 per hundredweight excluding a land charge. For middle and high cost groups, the net return per hundredweight when all expenses, excluding land, were considered was $-2.23 and $-15.01, respectively.

Noncash expenses include budgeted pasture and hay costs, building costs, fencing costs, water costs, interest on investment in cattle, and feed processing and hauling costs.

Returns over cash cost 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 paid.

The average low, medium, and high cost producers covered cash expenses. These cash expenses included feed, marketing, medical and veterinary, commission and insurance, property tax, hired labor, and fertilizer costs.

The fact that some operators did not meet total costs of production as determined did not mean that they would be forced out of production. Production can and will be continued as long as fixed assets are available to use or if they can be replaced with a lower cost asset of satisfactory utility.

## SUGGESTED IMPROVEMENTS FOR YEARLING BEEF PRODUCTION

It is the objective of good farm management to use the system of beef cattle production that most efficiently utilizes the available resources - land, labor, and capital.

Analysis of the cost data indicated that net returns received by

yearling cattle producers were low. The low cost producers were the only ones to have a positive net return to land and management.

It is the purpose of this section to suggest some programs or system of handling young cattle applicable to Alabama conditions. The Coastal Plain Area in Alabama was used because a large portion of the survey data was from this area. Each system or program developed was budgeted based on data from various secondary sources, and from personnel in the Animal Science Department, of this station. The budgets were prepared to reflect a high level of management by producers.

Programs involve producing beef yearlings and calves on combinations of Coastal bermuda pastures, hay and corn silage with all grain (corn) being bought. Prices received for yearlings and calves sold were assumed to be the same, $23.00 per hundredweight. Budgets for establishments and annual costs for Coastal bermudagrass pasture and hay are reported in Appendix B, Appendix Tables 1-4.

Two buy-and-sell programs as well as programs in which animals are raised are presented and comparisons are made.

## Buy-and-Sell Beef Cattle Production Programs

The buy-and-sell beef cattle production program refers to the type of operation in which a farmer buys and handles yearling animals to get as much gain in weight through growth and development as possible. This program is best adapted to farming situations where there is available an abundance of cheap roughage and pasture, very little grain or other feed concentrates, considerable operating capital or credit, and limited labor supply.

This system is characterized by a great deal of flexibility. It may consist of buying calves or yearlings in the fall, roughing them through the winter, and selling them at the end of the following summer grazing season as feeders. The cattle may be roughed through the winter by using stalk and stubble fields and feeding roughage, such as silage or grass hay with little or no grain or other feed concentrates. This involves about 1 year for a turnover of the capital investment. Or, a buy-and-sell program may consist of buying thin yearling in the spring, grazing them on permanent pasture, and selling them at the end of the grazing season in the fall as feeders. This provides for a turnover of the operating capital in 5 or 8 months.

This type of beef cattle production program requires a good knowledge of cattle management because thin animals may be unhealthy. Only thrifty, healthy cattle provide opportunity for profits. Good management is also required in buying cattle because one could not expect animals to gain more than 200 to 400 pounds per head, depending on length of the program and quality of the pasture and roughage fed. Stocker cattle are usually cheaper in the fall than in the spring. Yet, in many instances they may be lighter in weight in the spring to the extent that the capital investment would not vary greatly.

Many types of yearling programs utilize various feeds and roughages. These feeds vary with the availability of the type of roughage (hay, silage, or grazing) and concentrates. The following information illustrates the effect of two different types of feeding programs on net returns to land and management.

Hay and Pasture Program. The hay and pasture program, Tables 9, 10,

Table 9. Estimated Investment Components for 50 Steers, Hay and Pasture Program, Improved Practices, Coastal Plain Area, Alabama

| Item | Description | Cost basis | Average basis |
|---|---|---|---|
| Land[1/] | 30 acres @ $100 | $ 3,000 | $ 3,000 |
| Building[2/] | | 1,000 | 500 |
| Pasture and hay establishment | 30 acres @ $64.20 | 1,926 | 963 |
| Livestock[2/] | | 4,400 | 4,400 |
| Subtotal | | $10,326 | $ 8,863 |
| Machinery and equipment:[3/] | | | |
| Tractor | 3 plow | $ 3,300 | $ 1,650 |
| Disc | 8.5 feet | 275 | 138 |
| Rotary mower | 7 feet | 430 | 215 |
| Mower | 7 feet | 350 | 175 |
| Side delivery rake | 8 feet | 500 | 250 |
| Baler | Twine | 1,750 | 875 |
| Subtotal | | $ 6,605 | $ 3,303 |
| Total | | $16,931 | $12,166 |

1/ Includes source of water and fencing.
2/ See Table 10.
3/ Interest on investment in machinery and equipment is included in the pasture and hay budgets.

and 11, is based on buying 50, 400-pound good and choice feeder calves about November 1. They glean fields, pastures, or stubble until November 30 and then receive, free choice, the following ration until February 20:

| | Per cent |
|---|---|
| Ground Coastal bermuda hay | 69.0 |
| Ground snapped corn | 20.0 |
| Cottonseed meal (41%) | 10.0 |
| Salt (with trace minerals) | .5 |
| Dicalcium phosphate | .5 |

It is estimated that the steers will consume an average of 15 pounds of feed per day and gain at the rate of 1.5 pounds per day.

Table 10. Estimated Investment Requirements and Annual Costs for 50 Steers, Hay and Pasture Program, Improved Practices, Coastal Plain Area, Alabama

| Item | No. | Value | | Annual costs | | | |
|---|---|---|---|---|---|---|---|
| | | New | Average | Interest | Depreciation and repairs | Taxes and insurance | Total |
| Yearlings | 50 | $4,400 | $4,400 | $198.00 | | | $198.00 |
| Hay storage and feeding rack | 1 | 500 | 250 | 15.00 | $25.00 | $10.00 | 50.00 |
| Corral, and loading chute | 1 | 500 | 250 | 15.00 | 25.00 | 10.00 | 50.00 |
| Total | | $5,400 | $4,900 | $228,00 | $50.00 | $20.00 | $298.00 |

Permanent pasture is usually the key to success in a buy-and sell program. A continuous supply of good pasture during the entire summer grazing period will normally supply the nutritive requirements for good growth and development. From February 21 to July 15 the yearlings are on a Coastal bermudagrass pasture that has been sod-seeded with vetch. While on pasture it is estimated they will gain 1.4 pounds per head per day.

The steers are sold as feeders at a grade primarily of high good and a few grade low choice. Selling weight is 719 pounds less a 3.5 per cent shrink or 694 pounds.

Based on the improved practices program for the Coastal Plain Area of Alabama, total variable expense per hundredweight of all beef sold is $17.~~03~~ 72, and total expenses per hundredweight are $18.~~12~~ 80. With an average

Table 11. Estimated Costs and Returns for 50 Purchased Steers, Hay and Pasture Program, Improved Practices, Coastal Plain Area, Alabama

| Item | Description | Unit | Quantity | Rate | Amount |
|---|---|---|---|---|---|
| Receipts: | | | | | |
| Yearlings | 49.5 steers @ 694 lbs. each[1/] | Cwt. | 343.5 | $23.00 | $7,900.50 |
| Variable expenses: | | | | | |
| Calves | 50 @ 400 lbs. each | Cwt. | 200.0 | 22.0 | 4,400.00 |
| Pasture and hay | Coastal bermuda and vetch | Acre | 30.0 | 21.77 | 653.10 |
| Corn | Custom ground | Bu. | 176.0 | 1.525 | 268.40 |
| Cottonseed meal | 41% protein | Cwt. | 61.5 | 3.80 | 233.70 |
| Salt | Loose | Cwt. | 3.1 | 1.75 | 5.42 |
| | 50 lb. blocks (mineralized) | Blk. | 6.6 | 1.55 | 10.23 |
| Dicalcium phosphate | | Cwt. | 3.1 | 4.00 | 12.40 |
| Veterinary expenses | | Head | 50.0 | .50 | 25.00 |
| Marketing: | | | | | |
| Hauling | | Head | 50.0 | .50 | 25.00 |
| Commission | | Dol. | 7,900.50 | .03 | ~~2.37~~ 237.02 |
| Interest on operating capital | | Dol. | 582.52 | .06 | 17.48 |
| Interest on investment in beef cattle[2/] | | Dol. | | .045 | 198.00 |
| Total variable expenses | | | | | ~~$5,851.10~~ 6085.75 |
| Returns above variable expenses | | | | | ~~$2,049.40~~ 1814.75 |
| Fixed expenses: | | | | | |
| Pasture and hay | Coastal bermuda and vetch | Acre | 30.0 | 5.89 | $ 176.70 |
| Labor | Care of livestock | Hour | 112.0 | .50 | 56.00 |
| Fencing | | Acre | 30.0 | 1.00 | 30.00 |
| Buildings[2/] | | | | | 100.00 |
| Property tax on land | | Acre | 30.0 | .34 | 10.20 |
| Total fixed expenses | | | | | $ 372.90 |
| Net return to land and management | | | | | ~~$1,676.50~~ 1441.85 |

1/ Fifty steers at 719 pounds less a 3.5 per cent shrink and a one per cent death loss.

2/ See Table 10.

investment of $8,863, excluding machinery and equipment and the stated prices for steers, net return to land and management is $~~1,676.50~~ 1441.85 or ~~18.9~~ 16.3 per cent of the average capital investment. The net return to land and management for this program is about $~~33~~ 29 per steer or $~~56~~ 48 per acre.

Silage and Pasture Program. The silage program, Tables 12,13, and 14, is based on buying 50 400-pound good and choice feeder calves about November 1. They glean fields, pastures, or stubble until November 30. They receive a wintering ration of 25 pounds of silage, 2 pounds of ground snapped corn, and 1.5 pounds of 41% cottonseed meal per head daily until April 30. They are then placed on Coastal bermuda pasture from May 1 to July 15.

The steers should regain their purchase weight while gleaning fields and gain 1.4 pounds per day on the wintering ration and 1.4 pounds per day on pasture.

The steers are sold as feeders at a grade primarily of high good and a few grade low choice. The selling weight is 718 pounds less a 3.5 per cent shrink or 693 pounds.

Based on the improved practices and use of silage, total variable expense per hundredweight of all beef sold is $~~18.82~~ 19.51, and total expenses per hundredweight are ~~$20.44~~ 21.12. With an average investment of $10,118, excluding machinery and equipment and the stated prices for steers, net return to land and management is $~~877.89~~ 643.59 or ~~8.7~~ 6.4 per cent of the average capital investment . Net return to land and management is about $~~18~~ 13 per steer or $~~21~~ 15 per acre of land in pasture and corn silage.

The major differences between the hay-pasture program and the

Table 12. Estimated Investment Components for 50 Purchased Steers, Silage and Pasture Program, Improved Practices, Coastal Plain Area, Alabama

| Item | Description | Cost basis | Average basis |
|---|---|---|---|
| Land 1/ | 41.8 acres @ $100 | $ 4,180 | $ 4,180 |
| Building 2/ | | 1,150 | 575 |
| Pasture | 30 acres @ $64.20 | 1,926 | 963 |
| Livestock | | 4,400 | 4,400 |
| Subtotal | | $11,656 | $10,118 |
| Machinery and equipment: 3/ | | | |
| Tractor | 2 plow | $ 3,300 | $ 1,650 |
| Bottom plow | 3 plow | 340 | 170 |
| Disc | 8.5 feet | 275 | 138 |
| Rotary mower | 7 feet | 430 | 215 |
| Silage cutter | 1 row | 900 | 450 |
| Truck | | 4,000 | 2,000 |
| Total | | $ 9,245 | $ 4,623 |

1/ Includes source of water and fencing.
2/ See Table 13.
3/ Interest on investment in machinery and equipment is included in the pasture and silage budgets.

silage-pasture program are in the variable expenses. Corn silage is an additional expense. A larger quantity of cottonseed meal is fed and this increases the variable expenses about $600.

## Raised Yearling Beef Cattle Production Programs

The annual costs of a beef brood cow must be covered by the major output which is a calf or fraction thereof. A calf may be sold when weighing about 350 pounds, kept 2 or 3 months longer when it should weigh about 500 pounds, or held for several additional months at which time it may weigh 700 to 800 pounds. Thus, production per cow can be increased greatly by carrying calves to heavier weight classes. Carrying calves to heavier weights entails additional costs but income increases also.

Table 13. Estimated Investment Requirements and Annual Costs for 50 Purchased Steers, Silage and Pasture Program, Improved Practices, Coastal Plain Area, Alabama

| Item | No. | Value | | Annual costs | | | |
|---|---|---|---|---|---|---|---|
| | | New | Average | Interest | Depreciation and repairs | Taxes and insurance | Total |
| Yearlings | 50 | $4,400 | $4,400 | $198.00 | | | $198.00 |
| Trench silo and plastic cover | 1 | 650 | 325 | 19.50 | $64.50 | $ .90 | 84.90 |
| Corral and loading chute | 1 | 500 | 250 | 15.00 | 25.00 | 10.00 | 50.00 |
| Total | | $5,550 | $3,975 | $232.50 | $89.50 | $10.90 | $332.90 |

If 700-pound calves are sold, only half as many cows are necessary to produce a given volume of beef as would be required for 350-pound calves. About one-half as much would be invested in the breeding herd, which is a major consideration to a farmer who is starting in cattle production on borrowed funds. Only half as much grazing and other feeds would be required for the cows. Thus a large part of the grazing and feed would go into calves that constitute the marketable product.

Cows and weaned calves should be separated so that each herd will get the proper feeding and management. Unless such precautions are taken, too much of the grazing will go into cows and too little into calves. Rationing of feed resources to the various classes of animals according to their needs is possible in a grazing system only through management practices and proper separation of animal groups.

Table 14. Estimated Costs and Returns for 50 Purchased Steers, Silage and Pasture Programs, Improved Practices, Coastal Plain Area, Alabama

| Item | Description | Unit | Quantity | Rate | Amount |
|---|---|---|---|---|---|
| Receipts: | | | | | |
| Yearlings | 49.5 steers @ 693 lbs. each[1/] | Cwt. | 343.0 | $23.00 | $7,889.00 |
| Variable expenses: | | | | | |
| Calves | 50 @ 400 lbs. each | Cwt. | 200.0 | $22.00 | 4,400.00 |
| Pasture | Coastal bermuda | Acre | 30.0 | 21.20 | 636.00 |
| Corn silage | | Acre | 11.8 | 32.24 | 380.43 |
| Corn | Custom ground | Bu. | 201.0 | 1.525 | 306.52 |
| Cottonseed meal | 41% protein | Cwt. | 113.2 | 3.80 | 430.16 |
| Salt | Loose | Cwt. | 3.1 | 1.75 | 5.42 |
| | 50 lb. blocks (mineralized) | Blk. | 6.6 | 1.55 | 10.23 |
| Dicalcium phosphate | | Cwt. | 3.1 | 4.00 | 12.40 |
| Veterinary expenses | | Head | 50.0 | .50 | 25.00 |
| Marketing: | | | | | |
| Hauling | | Head | 50.0 | .50 | 25.00 |
| Commission | | Dol. | 7,889.00 | .03 | ~~2.37~~ 236.67 |
| Interest on operating capital | | Dol. | 817.10 | .06 | 24.51 |
| Interest on investment in beef cattle | | Dol. | | .045 | 198.00 |
| Total variable expenses | | | | | ~~$6,456.04~~ 6690.34 |
| Returns above variable expenses | | | | | ~~$1,432.96~~ 1198.66 |
| Fixed expenses: | | | | | |
| Pasture | Coastal bermuda | Acre | 30.0 | $ 5.43 | $ 162.90 |
| Corn silage | | Acre | 11.8 | 13.31 | 157.06 |
| Labor | Care of livestock | Hour | 112.0 | .50 | 56.00 |
| Fencing | | Acre | 30.0 | 1.00 | 30.00 |
| Buildings | | | | | 134.90 |
| Property tax on land | | Acre | 41.8 | .34 | 14.21 |
| Total fixed expenses | | | | | $ 555.07 |
| Net return to land and management | | | | | $ ~~877.89~~ 643.59 |

1/ Fifty steers at 718 pounds less a 3.5 per cent shrink and 1.0 per cent death loss.

Hay and Pasture Program (100 Brood Cows). This program, Tables 15, 16, and 17, is based on a herd of 100 beef 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 from high performing performance-tested bulls. A bull is purchased every year and used for four breeding seasons. The first year the bull is used to breed heifers only and no replacements are saved from first calf heifers. For the next 2 years the bull may be used to breed any cow and the fourth year only breed older cows.

Ninety calves are weaned each year and 10 calves are kept as replacements. Heifers are bred at 15 months of age. Most calves are dropped in November and December although some are born in October and January. The bull calves are castrated within 3 weeks of birth. A record of the sire and dam of each calf is kept so the cows may be performance tested. The calves are kept until yearlings and sold as feeders weighing 720 pounds each.

Medical and veterinary expense includes drenching the heifers with approved medication. Cows that fail to breed are sold. Animal units are used in determining feed requirements. One cow or one bull equals a unit and one yearling or replacement heifer equals three-fourths a unit. One calf equals one-half an animal unit. Thus the herd consists of 216.5 animal units.

Each animal unit requires 1.0 acre of Coastal bermuda for hay and pasture. Thus 216.5 acres of Coastal bermuda are required. Of the 216.5 acres, 146.3 acres are overseeded with vetch in late October or early November with a sod seeder. Of the remaining 70.2 acres, 29.3 are used for hay production. Each animal unit requires 0.8 tons of hay.

Table 15. Estimated Investment Components for 100 Beef Cow Herd Raising Yearlings, Improved Practices, Coastal Plain Area, Alabama

| Item | Description | Cost basis | Average basis |
|---|---|---|---|
| Land (including farmstead)[1/] | 216.5 acres @ $100 | $21,650 | $21,650 |
| Buildings[2/] | | 1,950 | 975 |
| Pasture establishment | 187.2 acres @ $44.90 | 8,405 | 4,202 |
| Hay establishment | 29.3 acres @ $44.90 | 1,316 | 658 |
| Livestock[2/] | | 25,600 | 25,600 |
| Subtotal | | $58,921 | $53,085 |
| Machinery and equipment:[3/] | | | |
| Tractor | 2 plow | $ 2,500 | $ 1,250 |
| Mower | 7 feet | 350 | 175 |
| Side delivery rake | 8 feet | 500 | 250 |
| Hay baler | Twine | 1,750 | 875 |
| Rotary mower | 7 feet | 430 | 215 |
| Fertilizer spreader | 8 feet | 275 | 138 |
| Sod seeder | 8 feet | 675 | 338 |
| Subtotal | | $ 6,480 | $ 3,240 |
| Total | | $65,401 | $56,325 |

1/ Includes source of water and fencing.
2/ See Table 16.
3/ Interest on investment in machinery and equipment is covered in the pasture and hay budgets. Equipment for establishment was considered owned but the investment was charged to other enterprises.

The yearlings receive, free choice, the following ration from November 30 until February 20:

| | Per cent |
|---|---|
| Ground Coastal bermuda hay | 69.0 |
| Ground snapped corn | 20.0 |
| Cottonseed meal (41%) | 10.0 |
| Salt (with trace minerals) | .5 |
| Dicalcium phosphate | .5 |

The yearling animals will consume an average of 15 pounds of feed per day and it is estimated they will gain at the rate of 1.5 pounds per day during this feeding period.

Table 16. Estimated Investment Requirements and Annual Costs for a 100 Beef Cow Herd Raising Yearlings, Improved Practices, Coastal Plain Area, Alabama

| Item | No. | Value | | Annual costs | | | |
|---|---|---|---|---|---|---|---|
| | | New | Average | Interest | Depreciation 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 |
| Yearlings | 80 | 7,200 | 7,200 | 360.00 | | | 360.00 |
| Hay storage and feeding rack | 1 | 1,450 | 725 | 43.50 | $72.50 | $29.00 | 145.00 |
| Corral and loading chute | 1 | 500 | 250 | 15.00 | 25.00 | 10.00 | 50.00 |
| Total | | $27,550 | $26,575 | $1,338.50 | $97.50 | $39.00 | $1,475.00 |

From February 21 to July 15 the yearlings are on a Coastal bermuda pasture that has been sod-seeded with vetch. While on pasture it is estimated they will gain 1.4 pounds per day.

The yearlings are sold at a feeder grade primarily of high good and a few grade low choice. The selling weight is 720 pounds less a 3.5 per cent shrink or 694 pounds.

Hay feeding in the winter for the brood cows and bulls is liberal enough to prevent excessive weight loss. Hay is fed at the rate of 16 pounds per animal 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 1.2 pounds per day per animal unit while the cows are fed hay.

Table 17. Estimated Costs and Returns From 100 Beef Cow Herd Raising Yearlings, Improved Practices, Coastal Plain Area, Alabama

| Item | Description | Unit | Quantity | Rate | Amount |
|---|---|---|---|---|---|
| Receipts: | | | | | |
| Yearlings | 80 head @ 694 lbs. each | Cwt. | 555.2 | $23.00 | $12,769.60 |
| Cull cows | 9 head @ 1,000 lbs. each | Cwt. | 90.0 | 13.00 | 1,170.00 |
| Bull | 1 head @ 1,500 lbs. each | Cwt. | 15 | 15.00 | 225.00 |
| Total | | | | | $14,164.60 |
| Variable expenses: | | | | | |
| Pasture | Coastal bermuda and vetch | Acre | 146.3 | 21.77 | 3,184.95 |
| | Coastal bermuda | Acre | 40.9 | 21.20 | 867.08 |
| Hay | Coastal bermuda | Acre | 29.3 | 59.14 | 1,732.80 |
| Corn | Custom ground | Bu. | 282.0 | 1.523 | 430.05 |
| Cottonseed meal | 41% protein | Cwt. | 254.5 | 3.80 | 967.10 |
| Salt | Loose | Cwt. | 32.9 | 1.75 | 57.58 |
| | 50 lb. blocks (mineralized) | Blk. | 10.6 | 1.55 | 16.43 |
| Dicalcium phosphate | | Cwt. | 16.2 | 4.00 | 64.80 |
| Veterinary expenses | | A.U. | 216.5 | .75 | 162.38 |
| Marketing: | | | | | |
| Hauling | | Head | 80.0 | .50 | 40.00 |
| Commission | | Dol. | 14,164.60 | .03 | 424.94 |
| Labor | Feeding and hauling | Hr. | 1,200 | .50 | 600.00 |
| Bull | | Head | 1 | 600.00 | 600.00 |
| Interest on investment in beef cattle | | Dol. | 25,600 | .05 | 1,280.00 |
| Interest on operating capital | | Dol. | 2,281.54 | .06 | 136.89 |
| Total variable expenses | | | | | $10,565.00 |
| Returns above variable expenses | | | | | 3,599.60 |
| Fixed expenses: | | | | | |
| Pasture | Coastal bermuda and vetch | Acre | 146.3 | 5.89 | $ 861.71 |
| | Coastal bermuda | Acre | 40.9 | 5.43 | 222.09 |
| Hay | | Acre | 29.3 | 15.59 | 456.79 |
| Fencing | | Acre | 216.5 | 1.00 | 216.50 |
| Buildings | | | | | 195.00 |
| Property tax on land | | Acre | 253.4 | .34 | 86.12 |
| Operator's labor | Buying,selling | Hour | 11.2 | 1.25 | 14.00 |
| Total fixed expenses | | | | | $ 2,052.21 |
| Total expenses | | | | | $12,617.21 |
| Net return to land and management | | | | | $ 1,547.39 |

Based on improved practices of raised yearling beef cattle production, total variable expenses per hundredweight are $16.00 and total expenses per hundredweight are $19.11. With an initial investment of $53,085, excluding machinery and equipment and the given prices for animals sold, net return to land and management is $1,547.39 or 2.9 per cent of the average capital investment.

Hay and Pasture Program (75 Brood Cows). This program, Tables 18, 19, and 20, is based on a herd of 75 cows weighing 1,000 pounds each, 8 yearling replacement heifers and 3 bulls. The cows are from one of the beef breeds and the bulls are from high performing performance-tested bulls. A bull is purchased about every 16 months and used for four breeding seasons. The first year the bull is used only on heifers and no replacements are saved from first calf heifers. For the next 2 years the bull may be used on any cows and the fourth year only on older cows.

Sixty-eight calves are weaned each year and eight calves are kept as replacements. Heifers are bred at 15 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 within three weeks of birth. A record of the sire and dam of each calf is kept so the cows may be performance tested. The calves are kept until yearlings and sold as feeders weighing 720 pounds each.

Medical and veterinary expenses include drenching the heifers twice each fall with approved medication. Cows that fail to breed are sold. Animal units are used in determining feed requirements. One cow or one bull equals one unit and one yearling or replacement heifer equals three-fourths of a unit. One calf equals one-half of an animal unit. Thus the herd consists of 163 animal units.

Table 18. Estimated Investment Components for 75 Beef Cow Herd Raising Yearlings, Improved Practices, Coastal Plain Area, Alabama

| Item | Description | Cost basis | Average basis |
|---|---|---|---|
| Land (including farmstead)[1/] | 163 acres @ $100 | $16,300 | $16,300 |
| Buildings[2/] | | 1,950 | 975 |
| Pasture establishment | 140.7 acres @ $44.90 | 6,317 | 3,158 |
| Hay establishment | 22.3 acres @ $44.90 | 1,001 | 501 |
| Livestock[2/] | | 19,250 | 19,250 |
| Subtotal | | $44,818 | $40,184 |
| Machinery and equipment:[3/] | | | |
| Tractor | 2 plow | $ 2,500 | $ 1,250 |
| Mower | 7 feet | 350 | 175 |
| Side delivery rake | 8 feet | 500 | 250 |
| Hay baler | Twine | 1,750 | 875 |
| Rotary mower | 7 feet | 430 | 215 |
| Fertilizer spreader | 8 feet | 275 | 138 |
| Sod seeder | 8 feet | 675 | 338 |
| Subtotal | | $ 6,480 | $ 3,240 |
| Total | | $51,298 | $43,424 |

1/ Includes source of water and fencing.
2/ See Table 19.
3/ Interest on investment in machinery and equipment is covered in the pasture and hay budgets. Equipment for establishment was considered owned but the investment was charged to other enterprises.

Each animal unit requires 1.0 acre of Coastal bermuda for hay and pasture. A total of 163 acres of Coastal bermuda are required. Of the 163 acres, 111.5 acres are overseeded with vetch in late October or early November with a sod seeder. Of the remaining 51.5 acres, 22.3 are used for hay production. Each animal unit requires .8 ton of hay.

The yearlings receive free choice the following ration from November 30 until February 20:

| | Per cent |
|---|---|
| Ground Coastal bermuda hay | 69.0 |
| Ground snapped corn | 20.0 |
| Cottonseed meal (41%) | 10.0 |
| Salt (with trace minerals) | .5 |
| Dicalcium phosphate | .5 |

Table 19. Estimated Investment Requirements and Annual Cost for a 75 Beef Cow Herd Raising Yearlings, Improved Practices, Coastal Plain Area, Alabama

| Item | No. | Value | | Annual costs | | | |
|---|---|---|---|---|---|---|---|
| | | New | Average | Interest | Depreciation and repairs | Taxes and insurance | Total |
| Cows | 75 | $11,250 | $11,250 | $ 562.50 | | | $ 562.50 |
| Bulls | 3 | 1,800 | 1,800 | 90.00 | | | 90.00 |
| Replacements | 8 | 800 | 800 | 40.00 | | | 40.00 |
| Yearlings | 60 | 5,400 | 5,400 | 270.00 | | | 270.00 |
| Hay storage and feeding rack | 1 | 1,450 | 725 | 43.50 | $72.50 | $29.00 | 145.00 |
| Corral and loading chute | 1 | 500 | 250 | 15.00 | 25.00 | 10.00 | 50.00 |
| Total | | $21,200 | $20,225 | $1,021.00 | $97.50 | $39.00 | $1,162.50 |

It is estimated that the yearling animals will consume an average 15 pounds of feed per day and gain at the rate of 1.5 pounds per day during this feeding period.

From February 21 to July 15 the yearlings are on a Coastal bermuda pasture that has been sod-seeded with vetch. While on pasture it is estimated they will gain 1.4 pounds per day.

The yearlings are sold at a feeder grade primarily of high good and a few grade low choice. The selling weight is 720 pounds less a 3.5 per cent shrink or 694 pounds.

Table 20. Estimated Costs and Returns From 75 Beef Cow Herd Raising Yearlings, Improved Practices, Coastal Plain Area, Alabama

| Item | Description | Unit | Quantity | Rate | Amount |
|---|---|---|---|---|---|
| Receipts: | | | | | |
| Yearlings | 60 head @ 694 lb. each | Cwt. | 416.4 | $23.00 | $ 9,577.20 |
| Cull cows | 7 head @ 1,000 lb. each | Cwt. | 70.0 | 13.00 | 910.00 |
| Bull | 3/4 head @ 1,500 lb. each | Cwt. | 11.2 | 15.00 | 168.00 |
| Total | | | | | $10,655.20 |
| Variable expenses: | | | | | |
| Pasture | Coastal bermuda and vetch | Acre | 111.5 | $21.77 | $ 2,427.36 |
| | Coastal bermuda | Acre | 29.2 | 21.20 | 619.04 |
| Hay | Coastal bermuda | Acre | 22.3 | 59.14 | 1,318.82 |
| Corn | Custom ground | Bu. | 211.5 | 1.523 | 322.11 |
| Cottonseed meal | 41% protein | Cwt. | 190.9 | 3.80 | 725.42 |
| Salt | Loose | Cwt. | 24.7 | 1.75 | 43.22 |
| | 50 lb. block (mineralized) | Blk. | 8.0 | 1.55 | 12.40 |
| Dicalcium phosphate | | Cwt. | 12.2 | 4.00 | 48.80 |
| Vet. expenses | | A. U. | 163.0 | .75 | 122.25 |
| Marketing: | | | | | |
| Hauling | | Head | 60.0 | .50 | 30.00 |
| Commission | | Dol. | 10,655.20 | .03 | 319.66 |
| Labor | Feeding and hauling | Hour | 900 | .50 | 450.00 |
| Bull | | Head | 3/4 | 600.00 | 450.00 |
| Interest on investment in beef cattle | | Dol. | 19,250 | .05 | 962.50 |
| Interest on operating capital | | Dol. | 1,474.20 | .06 | 88.45 |
| Total variable expenses | | | | | $ 7,940.03 |
| Returns above variable expenses | | | | | $ 2,715.17 |
| Fixed expenses: | | | | | |
| Pasture | Coastal bermuda and vetch | Acre | 111.5 | $ 5.89 | $ 656.74 |
| | Coastal bermuda | Acre | 29.2 | 5.43 | 158.56 |
| Hay | | Acre | 22.3 | 15.59 | 347.66 |
| Fencing | | Acre | 163.0 | 1.00 | 163.00 |
| Building | | | | | 195.00 |
| Property tax on land | | Acre | 163.0 | .34 | 55.42 |
| Operator's labor Buying,selling | | Hour | 8.4 | 1.25 | 10.50 |
| Total fixed expenses | | | | | $ 1,986.88 |
| Total expenses | | | | | $ 9,526.91 |
| Net return to land and management | | | | | $ 1,128.29 |

Hay feeding in the winter for the brood cows and bulls is liberal enough to prevent excessive weight loss. Hay is fed at the rate of 16 pounds per animal 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 1.2 pounds per day per animal unit while the cows are fed hay.

Based on the improved practices of raised yearling beef cattle production, the total variable expenses per hundredweight are $15.95 and total expenses per hundredweight are $19.15. With an average investment of $40,184, excluding machinery and equipment, and the stated prices for animals sold, net return to land and management is $1,128.29 or 2.8 per cent of the average investment.

Raised Beef Calf Program[4/] The raised beef calf program, Tables 21, 22, and 23, as presented is based on a herd of 100 cows, 10 yearling replacement heifers and 4 bulls. Ninety calves are weaned each year and 10 calves are kept as replacements. The calves are sold as stockers and feeders weighing 475 pounds each.

Variable expense per hundredweight of all beef sold is $15.82; total expense per hundredweight of all beef sold is $19.13. With the stated prices and an average investment of $39,580, the net return to land and management is $859.28 or 2.2 per cent of average investment.

## Comparisons

Comparisons among the various programs presented for producing yearling beef cattle and calves may be made by the use of summary data

4/ T. D. Nolen and J. H. Yeager, Beef Calf Production in Alabama: Costs, Returns, and Improvements, Agricultural Economics Series 5, Agricultural Experiment Station, Auburn University, June 1965, pp. 45-51.

Table 21. Estimated Investment Components for a 100 Beef Cow Herd, Improved Practices, Coastal Plain Area, Alabama

| Item | Description | Cost basis | Average basis |
|---|---|---|---|
| Land (including farmstead)[1/] | 165 acres at $100 | $16,500 | $16,500 |
| Buildings[2/] | | 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[2/] | | 18,400 | 18,400 |
| Subtotal | | $44,259 | $39,580 |
| Machinery and equipment:[3/] | | | |
| Tractor | 2 plow | $ 2,500 | $ 1,250 |
| Mower | 7 feet | 350 | 175 |
| Side delivery rake | 8 feet | 500 | 250 |
| Hay baler | Twine | 1,750 | 875 |
| Rotary mower | 7 feet | 430 | 215 |
| Fertilizer spreader | 8 feet | 275 | 138 |
| Sod seeder | 8 feet | 675 | 338 |
| Subtotal | | $ 6,480 | $ 3,240 |
| Total | | $50,739 | $42,820 |

1/ Includes source of water and fencing.
2/ See Table 22.
3/ Interest on investment in machinery and equipment is covered in the pasture and hay budgets. Equipment for establishment was considered owned but the investment was charged to other enterprises.

in Table 24. A larger capital investment in land, buildings, pasture and hay establishment, and livestock is required for programs with breeding stock. Investment per dollar of net return to land and management for the raised yearling programs with brood cows is about seven times that for the hay and pasture buy-sell program. A still higher investment per dollar of net return is required for the raised calf program.

Net returns to land and management are about the same for the raised yearling program with 100 brood cows and the hay and pasture buy-sell program with 50 steers. However, about one-seventh of the total land area and total investment is required for the buy-sell program. Net returns per acre of land and per dollar invested are considerably higher for the buy-sell programs than for programs of raised yearlings and

Table 22. Estimated Investment Requirements and Annual Costs for a 100 Beef Cow Herd, Improved Practices, Coastal Plain Area, Alabama

| Item | No. | Value | | Annual costs | | | |
|---|---|---|---|---|---|---|---|
| | | New | Average | Interest | Depreciation 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 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 |

calves presented. Costs per hundredweight of beef are about the same in the raised yearlings and raised calves programs. Unit cost of beef was highest in the silage-pasture buy-sell program and lowest in the hay-pasture buy-sell program.

The price received for yearlings or calves sold was assumed to be the same. This may not be true in given farm situations. A producer of raised calves, based on budget data presented, would need to receive $24.81 instead of $23.00 per hundredweight for calves sold for calf production with 100 cows to give a return to land and management equal to that for 100 cows from which raised yearlings are sold. Or another approach may be used. Instead of selling 80 calves at 475 pounds each, the calf producer would have to increase average selling of calves to 512 pounds for calf production to be equally as profitable as yearling production with price of animals sold the same in both cases.

Table 23. Estimated Costs and Returns From Beef Calf Production, 100 Beef Cows, Improved Practices, Coastal Plain Area, Alabama

| Item | Unit | Price | Quantity | Total for herd | Average per cow |
|---|---|---|---|---|---|
| Receipts: | | | | | |
| Calves | Cwt. | $23.00 | 380 | $ 8,740.00 | $ 87.40 |
| Cows[1/] | Cwt. | 13.00 | 90 | 1,170.00 | 11.70 |
| Bulls | Cwt. | 15.00 | 15 | 225.00 | 2.25 |
| 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[2/] | Dol. | .05 | 18,400 | 920.00 | 9.20 |
| Interest on operating capital | Dol. | .06 | 846.42 | 50.79 | .51 |
| Total variable expenses | | | | $ 7,671.67 | $ 76.72 |
| Return above variable expenses | | | | $ 2,463.33 | $ 24.63 |
| 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[2/] | | | | 195.00 | 1.95 |
| Property tax on land | Acre | .34 | 165.0 | 56.11 | .56 |
| Operator's labor (buying and selling) | Hour | 1.25 | 11.2 | 14.00 | .14 |
| Total fixed expenses | | | | $ 1,604.05 | $ 16.04 |
| Total expenses | | | | $ 9,275.72 | $ 92.76 |
| Net return to land and management | | | | $ 859.28 | $ 8.59 |

1/ Assumes a 1 per cent death loss.
2/ See Table 22.

Table 24. Comparison of Land Requirement, Investment, and Expenses and Returns from Producing Yearling Beef Cattle Under Various Programs and Beef Calves, Coastal Plain Area, Alabama

| Item | Program | | | | |
|---|---|---|---|---|---|
| | Buy-Sell | | Raised yearlings | | Raised calves |
| | Hay-pasture (50 steers) | Silage-pasture (50 steers) | 100 cows | 75 cows | 100 cows |
| Land (acres) | 30.0 | 41.8 | 216.5 | 163.0 | 165.0 |
| Average investment: | | | | | |
| Land | $ 3,000 | $ 4,180 | $21,650 | $16,300 | $16,500 |
| Buildings | 500 | 575 | 975 | 975 | 975 |
| Pasture & hay establishment | 963 | 963 | 4,860 | 3,659 | 3,705 |
| Livestock | 4,400 | 4,400 | 25,600 | 19,250 | 18,400 |
| Total | $ 8,863 | $10,118 | $53,085 | $40,184 | $39,580 |
| Receipts: | | | | | |
| Market beef | $ 7,901 | $ 7,889 | $12,770 | $ 9,577 | $ 8,740 |
| Others | -- | -- | 1,395 | 1,078 | 1,395 |
| Total | $ 7,901 | $ 7,889 | $14,165 | $10,655 | $10,135 |
| Expenses: | | | | | |
| Total | ~~$ 6,224~~ 6459 | ~~$ 7,011~~ 7245 | $12,617 | $ 7,927 | $ 9,276 |
| Expenses per hundredweight: | | | | | |
| Variable | ~~$17.03~~ 18.72 | ~~$18.82~~ 19.51 | $16.00 | $15.95 | $15.82 |
| Fixed | 1.09 | 1.62 | 3.11 | 3.20 | 3.31 |
| Total | ~~$18.12~~ 19.81 | ~~$20.44~~ 21.13 | $19.11 | $19.15 | $19.13 |
| Return above variable expenses | ~~$ 2,049~~ 1815 | ~~$ 1,433~~ 1199 | $ 3,600 | $ 2,715 | $ 2,463 |
| Net return to land and management | | | | | |
| Total | ~~$ 1,677~~ 1443 | ~~$ 878~~ 644 | $ 1,548 | $ 1,128 | $ 859 |
| Per acre | ~~55.88~~ 48.06 | ~~21.00~~ 15.40 | 7.15 | 6.92 | 5.21 |

The most prevalent program of beef production in Alabama is production of beef calves. Producers have long followed this type of production program. They are more familiar with production requirements and problems faced in calf than in yearling production. Probably the

overall risk involved in producing calves is less than with yearlings. However, consideration should be given to adjustments by many cattlemen that would point to growing calves into yearlings.

For the present calf producers, the shift to yearling production means reducing the number of brood cows or increasing the land area for beef use. The raised yearling program with 75 brood cows, as presented, requires about the same amount of land as the raised calf program with 100 brood cows. Differences in investment items between the two programs are not great. Yet, net returns to land and management are 31 per cent greater for the yearling than the calf program with about the same amount of land and capital investment.

Still greater returns are possible with the hay-pasture buy-sell program with beef steers. However, risk, particularly by market risk in connection with buying and selling steers, is greater compared with programs involving raised yearlings.

## POTENTIAL FOR YEARLING BEEF PRODUCTION

Beef consumption per capita in the U. S. has increased consistently since 1958. This increase has been about 20 pounds per person in the past 10 years. Per capita beef consumption in Alabama and the South is below the U. S. average. It is estimated that 1965 per capita consumption of beef in Alabama was about 85 pounds as compared with the U. S. average of 102 pounds. However, increasing population and family incomes point to increased demand for beef in the South.

The demand for fed or finished beef has also increased rapidly since World War II. Growth in cattle feeding has resulted in increased demands for feeder cattle. If a higher proportion of beef consumed is to come

from feedlot-finished animals, there will be increased needs for animals to go into feedlots. Does Alabama and the South have a potential for producing such animals?

In a recent study,[5/] 64 per cent of feeder cattle weighing 250-499 pounds and 53 per cent of those weighing 500 pounds and over sold through Alabama auction markets had a destination out of state. For the lighter weight group, 27 per cent went to Western States. It would appear that Alabama producers should be able to capture a larger portion of the market for growing and finishing beef cattle beyond the calf stage.

Trends in Alabama and the South point to possibilities for increased beef production based on forages. There is a continued shift away from row crops. Acreage in improved permanent pastures has increased. Improved higher-yielding forage crops are available and are used by many beef producers. Dairy cow numbers are declining.

Based on data presented, it is possible to increase the net return to land and management by shifting from raising calves to yearlings. For the same land area used for beef, it was shown, based on budgets, that net return to land and management was 31 per cent greater for yearlings than calves. A higher return to land is necessary as land values continue to increase.

Still greater net returns to land and management appear possible under a buy-sell program. Average investment in capital items is also

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5/ J. R. Meadows and M. J. Danner, Movement of Cattle and Calves Through Alabama Auction Markets, Bulletin 360, Agricultural Experiment Station, Auburn University, 1965, p. 12.

less under buy-sell programs than under programs in which breeding stock are maintained. However, risks resulting from market price fluctuations are greater with buy-sell programs. Highest net returns per acre appear possible with buy-sell programs.

The fact that feedlot operators are seeking feeder cattle in Alabama and the South is evidence that desirable beef animals are available at least during certain seasons of the year. They are apparently available at competitive prices with other sources of supply. This has stimulated demand and interest in production of feeders. Potential developments in the production of yearling feeder cattle will depend on alternative opportunities for resources that can be used for production of feed supplies, primarily pastures and roughages, as well as area differences in demand for feeder cattle. Transportation rates on both grain and cattle are important in determining the latter. Reductions in rail transportation rates point to potential gains for Alabama in beef 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 reports[1/] 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, Agricultural Economics Series 5, "Beef Calf Production in Alabama: Costs, Returns, and Improvements," June 1965.) 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 of publication mentioned above.

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

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 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, 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 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 in Agricultural Economics Series 5.)

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 ½ to 1½-ton capacity. If greater than 1½-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 northern and southern 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 5 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 4 per cent for depreciation, 3 per cent for interest (equivalent of 6 per cent on half the original or replacement cost), 2 per cent for taxes and insurance, and 1 per cent for repairs.

Producers reported the acres of land fenced with the prorata share or fencing chargeable to beef. Annual fencing costs charged were $1.00 per acre in northern and southern 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 5 per cent and that from ponds was multiplied by 1 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 5 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 because of 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

Appendix Table 1. Estimated Establishment Expense Per Acre of Coastal Bermuda, Improved Practices, Coastal Plain Area, Alabama

| Item | Description | Unit | Price | Quantity | Expense |
|---|---|---|---|---|---|
| Cash expense: | | | | | |
| Stolons | | Bu. | $0.50 | 9.0 | $ 4.50 |
| Fertilizer | 4-12-12 | Cwt. | 2.00 | 4.0 | 8.00 |
| | Ammonium Nitrate | Cwt. | 3.90 | 1.3 | 5.07 |
| Lime | Custom spread | Ton | 8.00 | 1.0 | 8.00 |
| Tractor | Gas, oil and repairs | | | | 3.96 |
| Machinery | Gas, oil and repairs | | | | 1.06 |
| Labor | | Hr. | .50 | 10.6 | 5.30 |
| Subtotal of cash expenses | | | | | $35.89 |
| Noncash expense: | | | | | |
| Tractor and machinery | Depreciation | | | | $ 1.78 |
| | Interest, housing, taxes and insurance | | | | 2.23 |
| Interest on investment capital | Compounded, ½ of $35.87 @ .05 | | | | 19.36 |
| Land[1/] | 100 @ .05 | | | | 5.00 |
| Subtotal of noncash expenses | | | | | $28.37 |
| Total establishment expenses | | | | | $64.26 |

1/ Since there is no return during the year of establishment a charge is made for the use of the land.

Appendix Table 2. Estimated Annual Expense Per Acre of Coastal Bermuda and Vetch Pasture, Improved Practices, Coastal Plain Area, Alabama

| Item | Description | Unit | Price | Quantity | Expense |
|---|---|---|---|---|---|
| Variable expense: | | | | | |
| Seed | Recommended variety | Lb. | $0.15 | 30.0 | $ 4.50 |
| Fertilizer | 0-20-20 | Cwt. | 2.83 | 3.0 | 8.49 |
| | Ammonium Nitrate | Cwt. | 3.90 | 1.0 | 3.90 |
| Lime | 3 tons next 14 years | | | | |
| | Custom spread | | | | 1.60 |
| Tractor | Gas, oil and repairs | | | | 1.11 |
| Machinery | Gas, oil and repairs | | | | .24 |
| Labor | | Hr. | .50 | 2.6 | 1.30 |
| Interest on operating capital | ½ of $21.14 @ .06 | | | | .63 |
| Subtotal of variable expenses | | | | | $21.77 |
| Fixed expense: | | | | | |
| 1/15 of establishment cost | | | | | $ 4.28 |
| Tractor and machinery | Depreciation | | | | .86 |
| | Interest, housing, taxes and insurance | | | | .75 |
| Subtotal of fixed expenses | | | | | $ 5.89 |

Appendix Table 3. Estimated Annual Expense Per Acre of Coastal Bermuda Pasture, Improved Practices, Coastal Plain Area, Alabama

| Item | Description | Unit | Price | Quantity | Expense |
|---|---|---|---|---|---|
| Variable expense: | | | | | |
| Fertilizer | 0-20-20 | Cwt. | $2.83 | 3.0 | $ 8.49 |
| | Ammonium Nitrate | Cwt. | 3.90 | 2.0 | 7.80 |
| Lime | 3 tons next 14 years Custom spread | | | | 1.60 |
| Tractor | Gas, oil and repairs | | | | 1.04 |
| Machinery | Gas, oil and repairs | | | | .25 |
| Labor | | Hr. | .50 | 2.8 | 1.40 |
| Interest on operating capital | ½ of $20.85 @ .06 | | | | .62 |
| Subtotal of variable expense | | | | | $21.20 |
| Fixed expense: | | | | | |
| 1/15 of establishment costs | | | | | $ 4.28 |
| Tractor and machinery | Depreciation | | | | .64 |
| | Interest, housing, taxes and insurance | | | | .51 |
| Subtotal of fixed expenses | | | | | $ 5.43 |

Appendix Table 4. Estimated Annual Expense of Coastal Bermuda Hay, Five Ton Yield, Improved Practices, Coastal Plain Area, Alabama

| Item | Description | Unit | Price | Quantity | Expense |
|---|---|---|---|---|---|
| Variable expense: | | | | | |
| Fertilizer | 0-10-20 | Cwt. | $1.93 | 5.0 | $ 9.65 |
| | Ammonium Nitrate | Cwt. | 3.90 | 6.0 | 23.40 |
| Lime | 3 tons next 14 years Custom spread | | | | 1.60 |
| Tractor | Gas, oil and repairs | | | | 5.20 |
| Machinery | Gas, oil and repairs | | | | 4.72 |
| Labor | | Hr. | .50 | 19.7 | 9.85 |
| Truck | Hauling Hay | Ton | .60 | 5.0 | 3.00 |
| Interest on operating capital | ½ of $57.42 @ .06 | | | | 1.72 |
| Subtotal of variable expenses | | | | | $59.14 |
| Fixed expense: | | | | | |
| 1/15 of establishment costs | | | | | $ 4.28 |
| Tractor and machinery | Depreciation | | | | 4.57 |
| | Interest, housing, taxes and insurance | | | | 6.74 |
| Subtotal of fixed expenses | | | | | $15.59 |