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Beef Forage Research Progress Report

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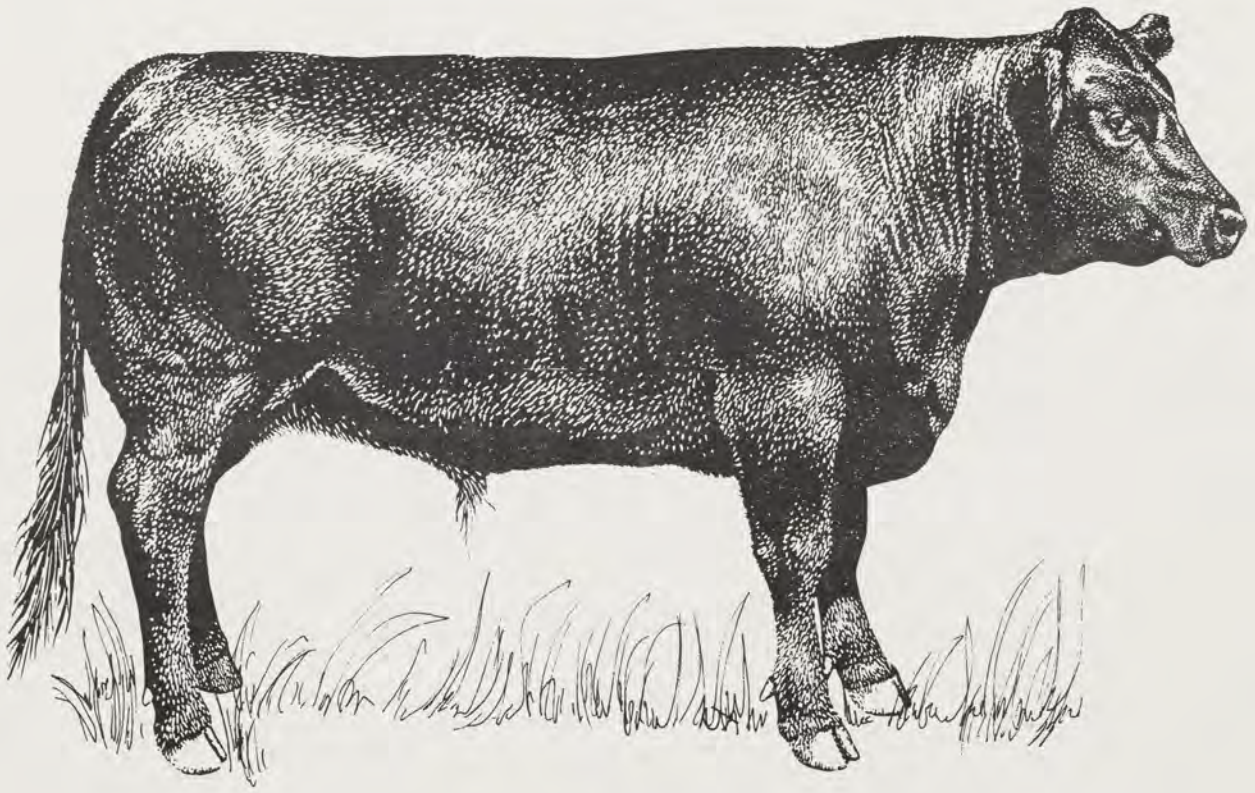
BEEF FORAGE RESEARCH PROGRESS REPORT



PROJECT MIS-1902
Forage Systems for Beef Cow-Calf Production
(Report of Progress at the Black Belt Branch)

MAFES MISSISSIPPI AGRICULTURAL & FORESTRY EXPERIMENT STATION
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PROJECT MIS-1902
Forage Systems for Beef Cow-Calf Production

Mississippi's beef cattle industry historically has centered around cow-calf production. Most calves traditionally have been sold at weaning, with producers depending on the revenue from sale of the weaned calves to cover the cost of maintaining the brood cow unit.

The availability of land and climate suitable for forage production in Mississippi and the high costs of grain, concentrates and stored forages dictate the use of grazed forages as the most practical means of producing weaned calves. The practicality of producing calves on forage has been recognized widely for many years; but the information required for increasing returns from calves produced on grazed forages has been inadequate. Therefore, Project MIS-1902 was initiated in 1975.

The objective of MIS-1902 is to determine the most profitable year-round forage system for cow-calf production in the major land resource areas of Mississippi.

MIS-1902 research also is being conducted at the MAFES Brown Loam Branch and the Mississippi State University Agricultural Research and Extension Centers at Poplarville and Pontotoc. The research at the Black Belt Branch is in cooperation with departments and scientists at Mississippi State University as follow:

Animal Science:
H. W. Essig

Agronomy:
Vance H. Watson

College of Veterinary Medicine:
Tom Randolph

Agricultural Economics:
Fred Tyner

Experimental Statistics:
Walter Drapala

Agricultural and Biological Engineering:
E. A. Kimbrough Jr.

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Black Belt Branch Experiment Station
Robert E. Coats, superintendent

With acknowledgment of support staff:

Roscoe Ivy, assistant superintendent
Wade Stewart, former research assistant
Frankie Boykin, herdsman
Mary Ann Gray, bookkeeper and secretary

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Robert E. Coats, superintendent, Black Belt Branch
Roscoe Ivy, assistant superintendent, Black Belt Branch
Vance H. Watson, professor and agronomist, Mississippi State University Department of Agronomy
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CONTENT

PROJECT DESIGN

A 90-acre pasture at the Black Belt Branch was cross-fenced for comparing three forage systems—Coastal bermudagrass, Alicia bermudagrass and common bermudagrass interseeded with tall fescue. The pasture was divided into six 15-acre paddocks to provide two replicates of each forage system. Cages were placed in each paddock to permit harvesting for determination of yield and quality of forage while the paddocks were being grazed.

FORAGE YIELD AND QUALITY

Forage was harvested from each caged area at 28-day intervals in 1977, 1978 and 1979. Dry matter yields were determined, and quality of forage was estimated (using results of analysis for crude protein, acid detergent fiber, neutral detergent fiber and lignin to estimate digestibility). Potassium (K), magnesium (Mg), sulfur (S), phosphorus (P), calcium (Ca), sodium (Na), iron (Fe), aluminum (Al), manganese (Mn), boron (B), copper (Cu) and zinc (Zn) content also were determined.

Results

Total dry matter production each year was higher for Coastal and Alicia bermudagrass than for common bermudagrass plus tall fescue (Table 1). Major differences in production of the three forage systems were in the months that normally are hotter and drier.

Crude protein content of the common bermudagrass plus tall fescue was higher than that of either of the other bermudagrasses (Table 2). Forages from each system contained enough crude protein to meet the minimum requirements of ruminants.

Estimates of quality of forage from the three systems differed only slightly (Tables 3, 4, 5, 6, 7 and 8). However, that part of the plant that is most highly digestible (about 98% digestible) generally was higher for the common bermudagrass plus tall fescue than for either Coastal or Alicia bermudagrass (Table 6), and total digestibility also tended to be higher for common bermudagrass plus tall fescue than for the other forages (Table 8).

The mineral content (K, Mg, S, P, Ca, Na, Fe, Al, Mn, B, Cu and Zn) of forage from each system was within limits considered normal for forage grasses (Tables 9, 10, 11, 12, 13 and 14).

BEEF COW-CALF PRODUCTION

The paddocks were stocked with angus cows and calves on April 19, 1977, by random assignment of one cow-calf unit per acre. The calves had been born in the previous fall and were weaned on June 14. Stocking rates until the cows were moved to fescue pasture on October 30 were—common bermudagrass, one cow per acre; Coastal and Alicia bermudagrass, one cow per acre until August 23 and 1.5 cows per acre thereafter.

The cows were bred to calve in the spring of 1978 and 1979 because of the lower maintenance (TDN) requirements of non-lactating cows in winter (see Management calendar, Table 15). All paddocks were stocked on March 31, 1978, with one cow-calf unit per acre. Seven of the cow-calf units were removed from each common bermudagrass paddock on July 20 because of insufficient forage. Calves left on the common bermudagrass were weaned when the cows were moved to winter pasture on October 9.

Each paddock was stocked with one cow-calf unit per acre on March 21, 1979. The cows were moved to winter pasture when the calves were weaned on October 3.

Salt was supplied free choice at all times. Trace mineralized salt was supplied to help prevent grass tetany on the lush growth of the tall fescue in early spring.

Cows from all forage systems were grouped and placed on tall fescue pasture at the end of each grazing season. The winter pasture was supplemented with hay, silage and protein (Table 16).

Four angus bulls were placed in the winter pasture when the cows were bred for fall calving. The bulls were left with the cows for 90 days, and the cows were palpated 60 days after the bulls were removed.

One bull was placed in each 15-acre paddock when the cows were bred for spring calving. Each bull was moved to a different forage system each 28th day over an 84-day breeding season.

Cows and calves were weighed at 28-day intervals, and the animals on each forage system were rotated between paddocks at each weighing.

Each forage system was fertilized each year with 120 lbs of N and 40 lbs each of P_2O_5 and K_2O, with 60 lbs of the N applied in April and 60 lbs in June.

Weeds were controlled by mowing twice each summer.

Results

Conception rates in 1977 and 1979 were higher for the cows on Coastal bermudagrass than for those on the other forage systems (Table 17). Only one half of the cows on Coastal conceived in 1978, compared with 56 and 60% for common and Alicia, respectively.

Calves that were dropped in fall of 1976 were weaned after only 56 days on each forage system (Table 18). Total gain of calves per acre averaged 74, 100 and 111 lbs for Alicia, Coastal and common, respectively.

Calves that were dropped in the spring were weaned after 192 days on each forage system in 1978, 196 days in 1979. Total gain of calves per acre in 1978 averaged 265, 267 and 270 lbs for Alicia, Coastal and common, respectively. Alicia provided the most total gain (321 lbs/acre) in 1979, followed by common (310 lbs/acre) and Coastal (292 lbs/acre).

COST AND RETURNS

Evaluation of the alternative forage systems requires construction of detailed forage budgets, determination of the costs directly related to maintenance of a cow-calf herd and relating these costs to animal performance data.

Pasture Establishment & Maintenance Costs

Input costs and forage yields vary from one situation to another, and producers should recognize that the budgets presented here are generalized and represent "recommended" practices for Mississippi. Input costs were developed from surveys of input suppliers in the Black Belt area in the spring of 1980. Adjustments for soil fertility, size and condition of owned equipment, different cultural practices and changing input prices are necessary to adapt these budgets to reflect a particular situation.

Representative budgets incorporating the practices described earlier in this report have been developed for initial establishment and annual maintenance of each forage system (Tables 19A-24B). A machinery and equipment budget accompanies each forage budget and specifies each machine operation, equipment size used, month operation is performed and the direct and fixed costs associated with each operation.

Cattle Costs

Annual maintenance costs (excluding forages and supplemental feed) for a brood herd composed of one bull, 25 cows, their calves and replacement heifers are developed in this section (Table 25). Three cows are assumed to be replaced annually (one death and two culls). Four replacement heifers are kept and one is culled before replacement. The bull is replaced each fourth year. Assuming an 84% calf crop with one calf death before weaning results in a brood herd (at weaning time) of 30 animal units (one bull + 25 cows and 20 calves + four replacements).

Direct expenses included in the brood herd budget are veterinary and medicine, salt and minerals, labor and interest on operating capital. Veterinary and medicine was charged at $.58 per month per cow-calf unit and at $.42 per month for other animals. Each animal was charged $.10 per month for salt and minerals. The monthly labor requirement was estimated at .28 hours or $.87 per animal (charged at $3.10/hr) for inspection, veterinary care and miscellaneous. Interest on operating capital was charged on all direct expenses at an annual 10% rate. The fixed costs included 10% interest on investment in the cows and the bull. No fixed charge was calculated for calves or replacements.

Costs & Returns by Forage Systems

The premise underlying comparisons among different forages was that each forage system/animal combination would result in a different set of cost and performance data. Thus, substracting the sum of forage system cost and animal costs from returns is a measure of economic returns (Table 26).

Direct expenses and fixed expenses were lower for common than for the other two systems. Costs exceeded returns for each system due primarily to the low average conception rate over the three-year period.

Table 1. Dry matter production of forage, by forage system, year and date of harvest, MAFES Black Belt Branch, 1977, 1978 and 1979.

Forage	Dry Matter Production By Months-Lbs/A						
				1977			
	5/16	6/14	7/12	8/9	9/13	10/4	Total
Coastal Bermuda	1569	1171	423	2986	1385	1825	9386
Alicia Bermuda	1079	767	417	3173	1001	1214	7651
Common Bermuda*	1079	382	150	1690	923	1112	5336
				1978			
	4/28	5/25	6/3	7/21	8/21	9/15	Total
Coastal Bermuda	1821	1844	1843	1023	1108	142	7781
Alicia Bermuda	2108	1928	1287	1141	1081	207	7752
Common Bermuda*	2147	2316	1125	651	462	58	6759
				1979				
	4/19	5/16	6/13	7/18	8/8	9/5	10/3	Total
Coastal Bermuda	946	1508	1024	2693	1525	1706	486	9888
Alicia Bermuda	1960	954	1120	2210	1494	1501	592	9831
Common Bermuda*	1782	1899	1021	1587	1385	1070	579	9323

*Interseeded with tall fescue.

Table 2. Crude protein and nitrate content of forage, by forage system, year and date of harvest, MAFES Black Belt Branch, 1977, 1978 and 1979.

Forage	Crude Protein (%)			Nitrate (%)		
			1977			
	6/14	8/9	10/4	6/14	8/9	10/4
Coastal Bermuda	10.0	13.3	9.9	.056	.100	.062
Alicia Bermuda	10.7	13.4	11.7	.105	.200	.078
Common Bermuda*	13.0	18.7	15.3	.120	.450	.082
			1978			
	5/25	6/23	8/21	5/25	6/23	8/21
Coastal Bermuda	13.0	16.3	12.8	--	--	--
Alicia Bermuda	14.3	14.3	11.9	--	--	--
Common Bermuda*	15.3	19.0	16.4	--	--	--
			1979			
	5/16	6/13	8/8	5/16	6/13	8/8
Coastal Bermuda	15.6	15.4	12.8	--	--	--
Alicia Bermuda	12.7	14.8	12.1	--	--	--
Common Bermuda*	17.6	18.4	14.7	--	--	--

*Interseeded with tall fescue.

Table 3. Neutral detergent fiber content of forage, by forage system, year and date of harvest, MAFES Black Belt Branch, 1977, 1978 and 1979.

Forage	Neutral Detergent Fiber (%)						
				1977			
	5/16	6/14	7/12	8/9	9/13	10/4	
Coastal Bermuda	68.4	71.4	71.6	73.6	73.5	76.9	
Alicia Bermuda	67.2	73.4	72.2	72.7	74.6	76.8	
Common Bermuda*	63.2	64.1	65.3	65.5	68.5	73.8	
				1978			
	4/18	5/25	6/23	7/21	8/21	9/15	
Coastal Bermuda	56.2	69.0	69.3	71.1	73.2	72.6	
Alicia Bermuda	61.6	69.9	68.8	72.6	74.0	73.0	
Common Bermuda*	59.9	62.0	65.2	66.8	68.0	69.6	
				1979			
	4/19	5/16	6/13	7/18	8/8	9/5	10/3
Coastal Bermuda	52.1	66.5	76.4	73.7	77.8	76.4	72.6
Alicia Bermuda	48.4	68.0	73.5	77.7	70.6	72.1	72.9
Common Bermuda*	52.9	62.0	58.6	69.3	73.7	67.1	61.6

*Interseeded with tall fescue.

Table 4. Acid detergent fiber content of forage, by forage system, year and date of harvest, MAFES Black Belt Branch, 1977, 1978 and 1979.

Forage	Acid Detergent Fiber (%)						
				1977			
	5/16	6/14	7/12	8.9	9/13	10/4	
Coastal Bermuda	34.5	35.2	35.4	34.2	37.3	41.9	
Alicia Bermuda	36.8	39.9	39.8	37.9	41.8	42.6	
Common Bermuda*	35.8	35.6	36.3	36.1	39.8	43.5	
				1978			
	4/18	5/25	6/23	7/21	8/21	9/15	
Coastal Bermuda	36.5	37.6	38.3	33.7	34.6	34.3	
Alicia Bermuda	36.8	44.4	36.5	37.7	37.4	38.0	
Common Bermuda*	34.1	42.1	34.8	36.8	33.4	31.7	
				1979			
	4/19	5/16	6/13	7/18	8/8	9/5	10/3
Coastal Bermuda	27.3	34.7	35.9	36.0	38.0	35.6	35.2
Alicia Bermuda	27.6	35.5	35.5	36.8	35.3	34.9	34.6
Common Bermuda*	28.5	37.6	34.3	35.9	39.6	33.9	33.0

*Interseeded with tall fescue.

Table 5. Lignin content of forage, by forage system, year and date of harvest, MAFES Black Belt Branch, 1977, 1978 and 1979.

Forage	Lignin (%)						
				1977			
	5/16	6/14	7/12	8/9"	9/13	10/4	
Coastal Bermuda	5.3	5.4	6.1	4.5	5.9	8.8	
Alicia Bermuda	6.1	8.4	6.9	5.3	6.7	8.4	
Common Bermuda*	4.6	5.1	6.1	5.8	6.7	7.6	
				1978			
	4/18	5/25	6/23	7/21	8/21	9/15	
Coastal Bermuda	7.0	7.3	4.4	5.1	5.3	5.7	
Alicia Bermuda	5.7	8.9	5.4	5.3	5.7	5.6	
Common Bermuda*	5.0	5.1	5.5	7.2	5.9	5.6	
				1979			
	4/19	5/16	6/13	7/18	8/8	9/5	10/3
Coastal Bermuda	3.9	5.8	5.2	4.5	4.9	4.2	5.6
Alicia Bermuda	4.7	6.0	5.3	5.6	4.6	5.1	5.3
Common Bermuda*	2.6	4.2	4.6	5.2	4.0	4.9	4.5

*Interseeded with tall fescue.

Table 6. Soluble cell content of forage, by forage system, year and date of harvest, MAFES Black Belt Branch, 1977, 1978 and 1979.

Forage	Soluble Cell Content (%)						
				1977			
	5/16	6/14	7/12	"8/9	9/13	10/4	
Coastal Bermuda	31.6	28.6	28.4	26.4	25.5	23.1	
Alicia Bermuda	32.8	26.6	27.8	27.3	25.4	23.2	
Common Bermuda*	36.8	35.9	34.7	34.5	31.5	26.2	
				1978			
	4/18	5/25	6/23	7/21	8/21	9/15	
Coastal Bermuda	43.8	31.0	30.7	28.9	26.8	27.4	
Alicia Bermuda	38.4	30.1	31.2	27.4	26.0	27.0	
Common Bermuda*	40.1	38.0	34.8	33.2	32.0	30.4	
				1979			
	4/19	5/16	6/13	7/18	8/8	9/5	10/3
Coastal Bermuda	47.9	33.5	23.6	26.3	22.2	23.6	27.4
Alicia Bermuda	51.6	32.0	26.5	22.3	29.4	27.9	27.1
Common Bermuda*	47.1	38.0	41.4	30.7	26.3	32.9	38.4

*Interseeded with tall fescue.

Table 7. Hemicellulose content of forage, by forage system, year and date of harvest, MAFES Black Belt Branch, 1977, 1978 and 1979.

Forage	Hemicellulose (%)						
				1977			
	5/16	6/14	7/12	8/9	9/13	10/4	
Coastal Bermuda	39.7	36.1	36.2	39.4	36.2	35.1	
Alicia Bermuda	30.3	35.5	32.4	34.8	34.2	36.5	
Common Bermuda*	27.4	28.5	29.0	29.5	29.3	30.4	
				1978			
	4/18	5/24	6/23	7/21	8/21	9/15	
Coastal Bermuda	19.7	31.4	31.1	37.4	38.6	38.3	
Alicia Bermuda	24.8	25.4	32.3	34.9	36.6	35.0	
Common Bermuda*	25.9	19.9	30.4	29.9	34.6	37.8	
				1979			
	4/19	5/16	6/13	7/18	8/8	9/5	10/3
Coastal Bermuda	24.8	31.8	40.5	37.7	39.7	40.8	37.4
Alicia Bermuda	20.7	32.4	38.0	40.8	35.3	37.3	38.4
Common Bermuda*	24.4	24.4	24.3	33.4	34.0	33.2	28.5

*Interseeded with tall fescue.

Table 8. Digestible dry matter content of forage, by forage system, year and date of harvest, MAFES Black Belt Branch, 1977, 1978 and 1979.

Forage	Digestible Dry Matter (%)						
				1977			
	5/16	6/14	7/12	8/9	9/13	10/4	
Coastal Bermuda	54.8	53.9	49.1	56.7	51.3	44.9	
Alicia Bermuda	53.5	45.3	50.7	55.3	50.4	43.9	
Common Bermuda*	61.0	58.2	54.4	49.5	52.5	49.0	
				1978			
	4/18	5/25	6/23	7/21	8/21	9/15	
Coastal Bermuda	56.1	49.0	61.1	54.1	52.6	51.2	
Alicia Bermuda	57.5	47.9	55.7	55.2	52.5	53.7	
Common Bermuda*	59.3	62.6	55.7	49.8	51.8	51.0	
				1979			
	4/19	5/16	6/13	7/18	8/8	9/5	10/3
Coastal Bermuda	63.3	53.7	52.6	57.5	55.1	58.0	52.3
Alicia Bermuda	62.1	52.7	53.3	51.2	57.9	54.2	52.7
Common Bermuda*	71.3	64.2	61.9	55.8	63.2	56.9	60.3

*Interseeded with tall fescue.

Table 9. Potassium and magnesium content of forage, by forage system, year and date of harvest, MAFES Black Belt Branch, 1977, 1978 and 1979.

Forage	Potassium (%)			Magnesium (%)		
			1977			
	6/14	8/9	10/4	6/14	8/9	10/4
Coastal Bermuda	.92	1.11	.80	.10	.10	.11
Alicia Bermuda	.89	1.49	.82	.12	.14	.12
Common Bermuda*	1.32	2.14	1.61	.17	.18	.18
			1978			
	5/25	6/23	8/21	5/25	6/23	8/23
Coastal Bermuda	2.20	1.96	1.54	.14	.13	.10
Alicia Bermuda	2.23	1.61	1.36	.11	.15	.12
Common Bermuda*	3.00	2.20	1.84	.24	.20	.13
			1979			
	5/16	6/13	8/8	5/16	6/13	8/8
Coastal Bermuda	1.61	1.69	1.55	.16	.14	.13
Alicia Bermuda	1.64	1.55	1.38	.12	.13	.13
Common Bermuda*	2.29	2.17	1.65	.22	.20	.17

*Interseeded with tall fescue.

Table 10. Sulfur and phosphorus content of forage, by forage system, year and date of harvest, MAFES Black Belt Branch, 1977, 1978 and 1979.

Forage	Sulfur (%)			Phosphorus (%)		
			1977			
	6/14	8/9	10/4	6/14	8/9	10/4
Coastal Bermuda	.39	.35	.39	.18	.26	.21
Alicia Bermuda	.33	.37	.41	.20	.24	.19
Common Bermuda*	.27	.28	.32	.19	.26	.26
			1978			
	5/25	6/23	8/21	5/25	6/23	8/21
Coastal Bermuda	.39	.56	.38	.36	.35	.27
Alicia Bermuda	.34	.41	.39	.35	.36	.29
Common Bermuda*	.32	.41	.24	.43	.42	.30
			1979			
	5/16	6/13	8/8	5/16	6/13	8/8
Coastal Bermuda	.41	.60	.51	.33	.40	.34
Alicia Bermuda	.39	.52	.47	.28	.38	.32
Common Bermuda*	.35	.45	.40	.36	.39	.29

*Interseeded with tall fescue.

Table 11. Calcium and sodium content of forage, by forage system, year and date of harvest, MAFES Black Belt Branch, 1977, 1978 and 1979.

Forage	Calcium (%)			Sodium (%)		
			1977			
	6/14	8/9	10/4	6/14	8/9	10/4
Coastal Bermuda	.89	.71	.81	.05	.08	.07
Alicia Bermuda	.80	.69	.70	.07	.10	.08
Common Bermuda*	.88	.69	.73	.04	.08	.06
			1978			
	5/25	6/23	8/21	5/25	6/23	8/21
Coastal Bermuda	.80	.80	.61	.12	.17	.20
Alicia Bermuda	.98	1.08	.86	.15	.14	.12
Common Bermuda*	.92	.90	.70	.13	.15	.09
			1979			
	5/16	6/13	8/8	5/16	6/13	8/8
Coastal Bermuda	.90	.82	.70	.23	.25	.20
Alicia Bermuda	.90	1.01	.96	.11	.10	.10
Common Bermuda*	.73	.78	.72	.29	.20.	.16

*Interseeded with tall fescue.

Table 12. Iron and aluminum content of forage, by forage system, year and date of harvest, MAFES Black Belt Branch, 1977, 1978 and 1979.

Forage	Iron ppm			Aluminum ppm		
			1977			
	6/14	8/9	10/4	6/14	8/9	10/4
Coastal Bermuda	426	283	1520	262	176	2060
Alicia Bermuda	740	1300	1770	690	1900	2420
Common Bermuda*	438	352	182	440	164	85
			1978			
	5/25	6/23	8/21	5/25	6/23	8/21
Coastal Bermuda	3830	1190	1090	6900	2180	1540
Alicia Bermuda	1250	6360	4290	1620	8610	2710
Common Bermuda*	4650	890	1140	3270	1310	1640
			1979			
	5/16	6/13	8/8	5/16	6/13	8/8
Coastal Bermuda	2620	1280	1810	3500	2500	3100
Alicia Bermuda	2660	2580	4460	4200	4200	6100
Common Bermuda*	2710	2100	5700	4400	3400	9200

*Interseeded with tall fescue.

Table 13. Manganese and boron content of forage, by forage system, year and date of harvest, MAFES Black Belt Branch, 1977, 1978 and 1979.

Forage	Manganese ppm			Boron ppm		
			1977			
	6/14	8/9	10/4	6/14	8/9	10/4
Coastal Bermuda	45	36	153	14	13	6
Alicia Bermuda	49	78	151	15	11	8
Common Bermuda*	56	53	83	20	11	5
			1978			
	5/25	6/23	8/21	5/25	6/23	8/21
Coastal Bermuda	144	52	44	15	9	10
Alicia Bermuda	76	410	77	13	10	9
Common Bermuda*	150	74	61	11	12	14
			1979			
	5/16	6/13	8/8	5/16	6/13	8/8
Coastal Bermuda	135	79	123	15	12	8
Alicia Bermuda	116	111	195	13	10	8
Common Bermuda*	148	98	181	10	17	8

*Interseeded with tall fescue.

Table 14. Copper and zinc content of forage, by forage system, year and date of harvest, MAFES Black Belt Branch, 1977, 1978 and 1979.

Forage	Copper ppm			Zinc ppm		
			1977			
	6/14	8/9	10/4	6/14	8/9	10/4
Coastal Bermuda	2	7	19	35	34	94
Alicia Bermuda	2	15	19	32	39	109
Common Bermuda*	2	29	14	39	48	70
			1978			
	5/25	6/23	8/21	5/25	6/23	8/21
Coastal Bermuda	30	36	26	170	150	170
Alicia Bermuda	24	100	24	160	180	180
Common Bermuda*	17	35	21	160	170	170
			1979			
	5/16	6/13	8/8	5/16	6/13	8/8
Coastal Bermuda	28	32	47	410	210	180
Alicia Bermuda	25	37	55	320	200	190
Common Bermuda*	190	29	48	270	190	200

*Interseeded with tall fescue.

Table 15. Management calender for forage systems at the MAFES Black Belt Branch, 1977, 1978 and 1979 (fall calving)[a/].

January:	Feeding cows and calves (fall calves) hay, silage, and protein on Fescue - Bulls with Cows
February:	Continue feeding cows and calves hay, silage, and protein - Bulls with Cows
March-April:	Continue feeding until cows placed on pasture. Bulls removed from pasture. Application of fertilizer to pastures 120-40-40. Nitrogen applied in split application. Remove bulls March 15.
May-June:	Cows on pastures. Control flies, spray for weeds. Wean calves in June. Vaccinate calves (blackleg-malignant edema-lepto. Worm calves. Vaccinate heifers for brucellosis. Worm cows, pregnancy check cows, cull open and aged.
July-August:	Make hay of surplus grass. Continue control flies. Control weeds in pasture. Cows calving end of August. Eartag calves, castrate bull calves, record birthweight, birthdate, cow number, etc. Watch for scours and screw worms.
September:	Continue calving. Make hay from surplus forage.
October:	Continue calving. Move cows and calves to fescue pasture. Fertilize fescue. Control lice.
November-December	Feeding silage, hay and protein. Put bulls with cows December 15.

[a/] Spring calving management calendar--Bulls placed with cows May 15 and removed August 10. Calving period February 15 to May 10.

Table 16. Supplemental feed[1/] required for cow-calf production on forage, by forage system, MAFES Black Belt Branch, 1977-1979 averages.

Item	Alicia Bermudagrass	Common Bermudagrass	Coastal Bermudagrass
	----------lbs/A----------		
Hay	1,115	1,115	1,115
Silage	3,670	3,670	3,670
Protein	180	180	180

1/ Hay @ $.03/lb and silage @ $13.00, plus CSM @ $.11/lb and DPW @ $.03/lb fed in a 1:1 ratio.

Table 17. Conception rates of Angus cows on forage by forage systems, MAFES Black Belt Branch, 1977, 1978 and 1979.

Forage System	1977	1978	1979	Av.
	----------%			
Alicia bermuda	80	60	80	73
Coastal bermuda	90	50	90	76
Common bermuda*	80	56	80	72

*Interseeded with tall fescue.

Table 18. Preweaning performance of calves on 15-acre paddocks of three forage systems, MAFES Black Belt Branch, 1977, 1978 and 1979.

Item	Unit	Forage System		
		Alicia	Coastal	Common[1]
Calves dropped in Fall of 1976				
Cow-calf units	No.	15	15	15
Calf data				
Date put on pasture	--	April 19	April 19	April 19
Weaning date	--	June 14	June 14	June 14
Grazing days	No.	56	56	56
Average age at weaning	Days	262	261	263
Average birth weight	Lbs.	61	59	62
Average weight when put on pasture	Lbs.	278	271	291
Average weaning weight				
Actual	Lbs.	352	371	402
205-day adjusted	Lbs.	288	304	333
Total gain per acre	Lbs.	74	100	111
Calves dropped in Spring 1978				
Cow-calf units	No.	15	15	15*
Calf data				
Date put on pasture	--	March 31	March 31	March 31
Weaning date	--	October 9	October 9	October 9
Grazing days	No.	192	192	192
Average age at weaning	Days	238	229	233
Average birth weight	Lbs.	61	58	66
Average weight when put on pasture	Lbs.	99	94	98
Average weaning weight				
Actual	Lbs.	364	361	420**
205-day adjusted	Lbs.	322	321	
Total gain per acre	Lbs.	265	267	270***
Calves dropped in Spring 1979				
Cow-calf units	No.			
Calf data				
Date put on pasture	--	March 21	March 21	March 21
Weaning date	--	October 3	October 3	October 3
Grazing days	No.	196	196	196
Average age at weaning	Days	204	201	196
Average birth weight	Lbs.	59	60	65
Average weight when put on pasture	Lbs.	59	60	65
Average weaning weight				
Actual	Lbs.	280	352	375
205-day adjusted	Lbs.	382	356	390
Total gain per acre	Lbs.	321	272	310

[1]Interseeded with tall fescue.

*Reduced to 8 cow-calf units on 7/20/78.

**Average of 8 calves

***Includes the average weight of the 7 calves when removed from pasture on 7/20/78.

TABLE 19A. ESTIMATED COST PER ACRE BY OPERATION, COASTAL (or ALICIA) BERMUDA PASTURE ESTABLISHMENT, BLACK BELT AREA OF MISSISSIPPI,1980.

OPERATION OR MATERIAL DESCRIPTION	UNIT	MO	TR	TIMES OVER	TRACTOR HOURS	TRACTOR DIRECT COST	TRACTOR FIXED COST	EQUIPMENT HOURS	EQUIPMENT DIRECT COST	EQUIPMENT FIXED COST	LABOR HOURS	LABOR COST	MATERIAL QUAN	MATERIAL PRICE	MATERIAL COST	TOTAL
LIME (SPREAD)	CWT	8	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	4.00	1.20	4.80	4.80
CHISEL PLOW 12'	ACRE	4	2	1.00	.30	1.54	1.47	.30	.21	.52	.30	.93	.00	.00	.00	4.67
DISK HARROW 14'	ACRE	4	2	1.00	.23	1.18	1.13	.23	.45	.88	.23	.71	.00	.00	.00	4.35
AMM. NITRATE	CWT	5	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	.85	7.35	6.25	6.25
SUPERPHOSPHATE	CWT	5	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	1.30	10.25	13.32	13.32
POTASH	CWT	5	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	1.00	7.45	7.45	7.45
SPREADER	ACRE	5	1	1.00	.20	.45	.41	.20	.14	.26	.20	.62	.00	.00	.00	1.88
DISK HARROW 14'	ACRE	5	2	1.00	.23	1.18	1.13	.23	.45	.88	.23	.71	.00	.00	.00	4.35
CUSTOM SPRIGGING	ACRE	5	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	1.00	40.00	40.00	40.00
CULTIPACKER	ACRE	5	2	1.00	.24	1.23	1.18	.24	.24	.83	.24	.74	.00	.00	.00	4.23
2, 4-D AMINE	LB	5	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	2.00	2.55	5.10	5.10
SPRAYER 21'	LB	5	1	1.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	.00	.00
AMM. NITRATE	CWT	7	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	.85	7.35	6.25	6.25
SPREADER	ACRE	7	1	1.00	.20	.45	.41	.20	.14	.26	.20	.62	.00	.00	.00	1.88
TOTAL					1.40	6.05	5.73	1.40	1.63	3.63	1.40	4.34			83.17	104.55

TABLE 19B. ESTIMATED COST AND NET RETURNS PER ACRE, COASTAL (or ALICIA) BERMUDA PASTURE ESTABLISHMENT, BLACK BELT AREA OF MISSISSIPPI,1980.

ITEM	UNIT	PRICE DOLLARS	QUANTITY	AMOUNT DOLLARS
INCOME				
TOTAL INCOME				.00
DIRECT EXPENSES				
OPERATOR LABOR	HOUR	3.10	1.40	4.34
LIME (SPREAD)	CWT	1.20	4.00	4.80
AMM. NITRATE	CWT	7.35	1.70	12.50
SUPERPHOSPHATE	CWT	10.25	1.30	13.32
POTASH	CWT	7.45	1.00	7.45
CUSTOM SPRIGGING	ACRE	40.00	1.00	40.00
2, 4-D AMINE	LB	2.55	2.00	5.10
EQUIPMENT	ACRE	1.63	1.00	1.63
TRACTOR	ACRE	6.05	1.00	6.05
INT ON OP CAP	ACRE	2.64	1.00	2.64
TOTAL DIRECT EXPENSE				97.83
RETURNS ABOVE DIRECT EXPENSES				-97.83
FIXED EXPENSES				
EQUIPMENT	ACRE	3.63	1.00	3.63
TRACTOR	ACRE	5.73	1.00	5.73
TOTAL FIXED EXPENSE				9.36
TOTAL SPECIFIED EXPENSES				107.19
NET RETURN				-107.19

TABLE 20A. ESTIMATED COST PER ACRE BY OPERATION, COMMON BERMUDA PASTURE ESTABLISHMENT, BLACK BELT AREA OF MISSISSIPPI,1980.

OPERATION OR MATERIAL DESCRIPTION	UNIT	MO	TR	TIMES OVER	TRACTOR HOURS	TRACTOR DIRECT COST	TRACTOR FIXED COST	EQUIPMENT HOURS	EQUIPMENT DIRECT COST	EQUIPMENT FIXED COST	LABOR HOURS	LABOR COST	MATERIAL QUAN	MATERIAL PRICE	MATERIAL COST	TOTAL
LIME (SPREAD)	CWT	8	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	4.00	1.20	4.80	4.80
CHISEL PLOW 12'	ACRE	4	2	1.00	.30	1.54	1.47	.30	.21	.52	.30	.93	.00	.00	.00	4.67
DISK HARROW 14"	ACRE	4	2	1.00	.23	1.18	1.13	.23	.45	.88	.23	.71	.00	.00	.00	4.35
AMM. NITRATE	CWT	5	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	.85	7.35	6.25	6.25
SUPERPHOSPHATE	CWT	5	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	1.30	10.25	13.32	13.32
POTASH	CWT	5	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	1.00	7.45	7.45	7.45
SPREADER	ACRE	5	1	1.00	.20	.45	.41	.20	.14	.26	.20	.62	.00	.00	.00	1.88
DISK HARROW 14"	ACRE	5	2	1.00	.23	1.18	1.13	.23	.45	.88	.23	.71	.00	.00	.00	4.35
SECTION HARROW 14"	ACRE	5	1	1.00	.14	.32	.29	.14	.04	.07	.14	.43	.00	.00	.00	1.15
COMMON BERMUDA SEED	LB	5	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	5.00	2.35	11.75	11.75
TAILGATE SEEDER	ACRE	5	1	1.00	.20	.45	.41	.20	.18	.26	.20	.62	.00	.00	.00	1.92
CULTIPACKER	ACRE	5	2	1.00	.24	1.23	1.18	.24	.24	.83	.24	.74	.00	.00	.00	4.23
2,4-D AMINE	LB	5	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	2.00	2.55	5.10	5.10
SPRAYER	ACRE	5	1	1.00	.18	.41	.37	.18	.15	.23	.18	.56	.00	.00	.00	1.72
AMM. NITRATE	CWT	7	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	.85	7.35	6.25	6.25
SPREADER	ACRE	7	1	1.00	.20	.45	.41	.20	.14	.26	.20	.62	.00	.00	.00	1.88
TOTAL					1.92	7.23	6.80	1.92	2.00	4.19	1.92	5.95			54.92	81.09

TABLE 20B. ESTIMATED COST AND NET RETURNS PER ACRE, COMMON BERMUDA PASTURE ESTABLISHMENT, BLACK BELT AREA OF MISSISSIPPI,1980.

ITEM	UNIT	PRICE DOLLARS	QUANTITY	AMOUNT DOLLARS
INCOME				
TOTAL INCOME				.00
DIRECT EXPENSES				
OPERATOR LABOR	HOUR	3.10	1.92	5.95
LIME (SPREAD)	CWT	1.20	4.00	4.80
AMM. NITRATE	CWT	7.35	1.70	12.50
SUPERPHOSPHATE	CWT	10.25	1.30	13.32
POTASH	CWT	7.45	1.00	7.45
COMMON BERMUDA SEED	LB	2.35	5.00	11.75
2,4-D AMINE	LB	2.55	2.00	5.10
EQUIPMENT	ACRE	2.00	1.00	2.00
TRACTOR	ACRE	7.23	1.00	7.23
INT ON OP CAP	ACRE	3.74	1.00	3.74
TOTAL DIRECT EXPENSE				73.84
RETURNS ABOVE DIRECT EXPENSES				-73.84
FIXED EXPENSES				
EQUIPMENT	ACRE	4.19	1.00	4.19
TRACTOR	ACRE	6.80	1.00	6.80
TOTAL FIXED EXPENSE				10.99
TOTAL SPECIFIED EXPENSES				84.83
NET RETURN				-84.83

TABLE 21A. ESTIMATED COST PER ACRE BY OPERATION, FESCUE PASTURE ESTABLISHMENT, BLACK BELT AREA OF MISSISSIPPI,1980.

OPERATION OR MATERIAL DESCRIPTION	UNIT	MO	TR	TIMES OVER	TRACTOR HOURS	TRACTOR DIRECT COST	TRACTOR FIXED COST	EQUIPMENT HOURS	EQUIPMENT DIRECT COST	EQUIPMENT FIXED COST	LABOR HOURS	LABOR COST	MATERIAL QUAN	MATERIAL PRICE	MATERIAL COST	TOTAL
LIME (SPREAD)	CWT	8	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	4.00	1.20	4.80	4.80
CHISEL PLOW	ACRE	8	2	1.00	.30	1.54	1.47	.30	.21	.52	.30	.93	.00	.00	.00	4.67
DISK HARROW	ACRE	9	2	1.00	.23	1.18	1.13	.23	.45	.88	.23	.71	.00	.00	.00	4.35
DISK HARROW	ACRE	9	2	1.00	.23	1.18	1.13	.23	.45	.88	.23	.71	.00	.00	.00	4.35
SECTION HARROW	ACRE	10	1	1.00	.14	.32	.29	.14	.04	.07	.14	.43	.00	.00	.00	1.15
FESCUE SEED	LB	10	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	15.00	.36	5.40	5.40
GRAINDRILL	ACRE	10	2	1.00	.24	1.23	1.18	.24	.72	1.65	.24	.74	.00	.00	.00	5.71
CULTIPACKER	ACRE	10	1	1.00	.24	.54	.49	.24	.24	.83	.30	.93	.00	.00	.00	2.85
AMM. NITRATE	CWT	10	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	1.28	7.35	9.41	9.41
SUPERPHOSPHATE	CWT	10	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	1.30	10.25	13.32	13.32
POTASH	CWT	10	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	1.00	7.45	7.45	7.45
SPREADER	ACRE	10	1	1.00	.20	.45	.41	.20	.14	.26	.20	.62	.00	.00	.00	1.88
AMM. NITRATE	CWT	3	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	1.28	7.35	9.41	9.41
SPREADER	ACRE	3	1	1.00	.20	.45	.41	.20	.14	.26	.20	.62	.00	.00	.00	1 .88
TOTAL					1.78	6.91	6.51	1.78	2.39	5.35	1.84	5.70			49.79	76.65

TABLE 21B. ESTIMATED COST AND NET RETURNS PER ACRE, FESCUE PASTURE ESTABLISHMENT, BLACK BELT AREA OF MISSISSIPPI,1980.

ITEM	UNIT	PRICE DOLLARS	QUANTITY	AMOUNT DOLLARS
INCOME				
TOTAL INCOME				.00
DIRECT EXPENSES				
OPERATOR LABOR	HOUR	3.10	1.84	5.71
LIME (SPREAD)	CWT	1.20	4.00	4.80
FESCUE SEED	LB	.36	15.00	5.40
AMM. NITRATE	CWT	7.35	2.56	18.82
SUPERPHOSPHATE	CWT	10.25	1.30	13.32
POTASH	CWT	7.45	1.00	7.45
EQUIPMENT	ACRE	2.39	1.00	2.39
TRACTOR	ACRE	6.91	1.00	6.91
INT ON OP CAP	ACRE	6.15	1.00	6.15
TOTAL DIRECT EXPENSE				70.94
RETURNS ABOVE DIRECT EXPENSES				-70.94
FIXED EXPENSES				
EQUIPMENT	ACRE	5.35	1.00	5.35
TRACTOR	ACRE	6.51	1.00	6.51
TOTAL FIXED EXPENSE				11.86
TOTAL SPECIFIED EXPENSES				82.80
NET RETURN				-82.80

TABLE 22A. ESTIMATED COST PER ACRE BY OPERATION, COASTAL (or ALICIA) BERMUDA PASTURE MAINTENANCE, BLACK BELT AREA OF MISSISSIPPI,1980.

OPERATION OR MATERIAL DESCRIPTION	UNIT	MO	TR	TIMES OVER	TRACTOR HOURS	TRACTOR DIRECT COST	TRACTOR FIXED COST	EQUIPMENT HOURS	EQUIPMENT DIRECT COST	EQUIPMENT FIXED COST	LABOR HOURS	LABOR COST	MATERIAL QUAN	MATERIAL PRICE	MATERIAL COST	TOTAL
LIME (SPREAD)	ACRE	8	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	4.00	1.20	4.80	4.80
AMM. NITRATE	CWT	4	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	1.90	7.35	13.97	13.97
SUPERPHOSPHATE	CWT	4	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	1.10	10.25	11.27	11.27
POTASH	CWT	4	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	.85	7.45	6.33	6.33
SPREADER	ACRE	4	1	1.00	.20	.45	.41	.20	.14	.26	.20	.62	.00	.00	.00	1.88
WEEDMASTER	PT	4	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	1.50	2.49	3.74	3.74
SPRAYER	ACRE	4	1	1.00	.18	.41	.37	.18	.15	.23	.18	.56	.00	.00	.00	1.72
MOWER	ACRE	6	2	1.00	.20	1.03	.98	.20	.27	1.08	.20	.62	.00	.00	.00	3.98
AMM. NITRATE	CWT	6	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	1.90	7.35	13.97	13.97
SPREADER	ACRE	6	1	1.00	.20	.45	.41	.20	.14	.26	.20	.62	.00	.00	.00	1.88
AMM. NITRATE	CWT	7	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	1.90	7.35	13.97	13.97
SPREADER	ACRE	7	1	1.00	.20	.45	.41	.20	.14	.26	.20	.62	.00	.00	.00	1.88
PRORATED EST. COST	ACRE	0	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	10.72
TOTAL					.98	2.80	2.58	.98	.84	2.09	.98	3.04			68.04	90.11

TABLE 22B. ESTIMATED COST AND NET RETURNS PER ACRE, COASTAL (or ALICIA) BERMUDA PASTURE MAINTENANCE, BLACK BELT AREA OF MISSISSIPPI,1980.

ITEM	UNIT	PRICE DOLLARS	QUANTITY	AMOUNT DOLLARS
INCOME				
TOTAL INCOME				.00
DIRECT EXPENSES				
OPERATOR LABOR	HOUR	3.10	.98	3.04
LIME (SPREAD)	ACRE	1.20	4.00	4.80
AMM. NITRATE	CWT	7.35	5.70	41.89
SUPERPHOSPHATE	CWT	10.25	1.10	11.27
POTASH	CWT	7.45	.85	6.33
WEEDMASTER	PT	2.49	1.50	3.74
EQUIPMENT	ACRE	.84	1.00	.84
TRACTOR	ACRE	2.80	1.00	2.80
INT ON OP CAP	ACRE	3.12	1.00	3.12
TOTAL DIRECT EXPENSE				77.84
RETURNS ABOVE DIRECT EXPENSES				-77.84
FIXED EXPENSES				
PRORATED EST. COST	ACRE	10.72	1.00	10.72
EQUIPMENT	ACRE	2.09	1.00	2.09
TRACTOR	ACRE	2.58	1.00	2.58
TOTAL FIXED EXPENSE				15.39
TOTAL SPECIFIED EXPENSES				93.23
NET RETURN				-93.23

TABLE 23A. ESTIMATED COST PER ACRE BY OPERATION, COMMON BERMUDA PASTURE MAINTENANCE, BLACK BELT AREA OF MISSISSIPPI,1980.

OPERATION OR MATERIAL DESCRIPTION	UNIT	MO	TR	TIMES OVER	TRACTOR HOURS	TRACTOR DIRECT COST	TRACTOR FIXED COST	EQUIPMENT HOURS	EQUIPMENT DIRECT COST	EQUIPMENT FIXED COST	LABOR HOURS	LABOR COST	MATERIAL QUAN	MATERIAL PRICE	MATERIAL COST	TOTAL
LIME (SPREAD)	CWT	8	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	4.00	1.20	4.80	4.80
AMM. NITRATE	CWT	4	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	2.28	7.35	16.76	16.76
SUPERPHOSPHATE	CWT	4	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	.85	10.25	8.71	8.71
POTASH	CWT	4	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	.65	7.45	4.84	4.84
SPREADER	ACRE	4	1	1.00	.20	.45	.41	.20	.14	.26	.20	.62	.00	.00	.00	1.88
2,4-D	LB	5	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	2.00	2.55	5.10	5.10
SPRAYER	ACRE	5	1	1.00	.18	.41	.37	.18	.15	.23	.18	.56	.00	.00	.00	1.72
MOWER	ACRE	6	2	1.00	.20	1.03	.98	.20	.27	1.08	.20	.62	.00	.00	.00	3.98
AMM. NITRATE	CWT	6	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	2.28	7.35	16.76	16.76
SPREADER	ACRE	6	1	1.00	.20	.45	.41	.20	.14	.26	.20	.62	.00	.00	.00	1.88
MOWER	ACRE	8	2	1.00	.20	1.03	.98	.20	.27	1.08	.20	.62	.00	.00	.00	3.98
PRORATED EST. COST	ACRE	0	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8.48
TOTAL					.98	3.37	3.15	.98	.97	2.91	.98	3.04			56.97	78.89

TABLE 23B. ESTIMATED COST AND NET RETURNS PER ACRE, COMMON BERMUDA PASTURE MAINTENANCE, BLACK BELT AREA OF MISSISSIPPI,1980.

ITEM	UNIT	PRICE DOLLARS	QUANTITY	AMOUNT DOLLARS
INCOME				
TOTAL INCOME				.00
DIRECT EXPENSES				
OPERATOR LABOR	HOUR	3.10	.98	3.04
LIME (SPREAD)	CWT	1.20	4.00	4.80
AMM. NITRATE	CWT	7.35	4.56	33.52
SUPERPHOSPHATE	CWT	10.25	.85	8.71
POTASH	CWT	7.45	.65	4.84
2,4-D	LB	2.55	2.00	5.10
EQUIPMENT	ACRE	.97	1.00	.97
TRACTOR	ACRE	3.37	1.00	3.37
INT ON OP CAP	ACRE	2.42	1.00	2.42
TOTAL DIRECT EXPENSE				66.77
RETURNS ABOVE DIRECT EXPENSES				-66.77
FIXED EXPENSES				
PRORATED EST. COST	ACRE	8.48	1.00	8.48
EQUIPMENT	ACRE	2.91	1.00	2.91
TRACTOR	ACRE	3.15	1.00	3.15
TOTAL FIXED EXPENSE				14.54
TOTAL SPECIFIED EXPENSES				81.32
NET RETURN				-81.32

TABLE 24A. ESTIMATED COST PER ACRE BY OPERATION, FESCUE PASTURE MAINTENANCE, BLACK BELT AREA OF MISSISSIPPI,1980.

OPERATION OR MATERIAL DESCRIPTION	UNIT	MO	TR	TIMES OVER	TRACTOR HOURS	TRACTOR DIRECT COST	TRACTOR FIXED COST	EQUIPMENT HOURS	EQUIPMENT DIRECT COST	EQUIPMENT FIXED COST	LABOR HOURS	LABOR COST	MATERIAL QUAN	MATERIAL PRICE	MATERIAL COST	TOTAL
MOWER	ACRE	7	2	1.00	.20	1.03	.98	.20	.27	1.08	.20	.62	.00	.00	.00	3.98
LIME (SPREAD)	CWT	8	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	4.00	1.20	4.80	4.80
AMM. NITRATE	CWT	9	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	1.73	7.35	12.72	12.72
SUPERPHOSPHATE	CWT	9	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	1.10	10.25	11.27	11.27
POTASH	CWT	9	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	.85	7.45	6.33	6.33
SPREADER	ACRE	9	1	1.00	.20	.45	.41	.20	.14	.26	.20	.62	.00	.00	.00	1.88
AMM. NITRATE	CWT	3	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	1.73	7.35	12.72	12.72
SPREADER	ACRE	3	1	1.00	.20	.45	.41	.20	.14	.26	.20	.62	.00	.00	.00	1.88
PRORATED EST. COST	ACRE	0	0	1.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8.28
TOTAL					.60	1.94	1.80	.60	.55	1.60	.60	1.86			47.84	63.87

TABLE 24B. ESTIMATED COST AND NET RETURNS PER ACRE, FESCUE PASTURE MAINTENANCE, BLACK BELT AREA OF MISSISSIPPI,1980.

ITEM	UNIT	PRICE DOLLARS	QUANTITY	AMOUNT DOLLARS
INCOME				
TOTAL INCOME				.00
DIRECT EXPENSES				
OPERATOR LABOR	HOUR	3.10	.60	1.86
LIME (SPREAD)	CWT	1.20	4.00	4.80
AMM. NITRATE	CWT	7.35	3.46	25.43
SUPERPHOSPHATE	CWT	10.25	1.10	11.27
POTASH	CWT	7.45	.85	6.33
EQUIPMENT	ACRE	.55	1.00	.55
TRACTOR	ACRE	1.94	1.00	1.94
INT ON OP CAP	ACRE	2.38	1.00	2.38
TOTAL DIRECT EXPENSE				54.57
RETURNS ABOVE DIRECT EXPENSES				-54.57
FIXED EXPENSES				
PRORATED EST. COST	ACRE	8.28	1.00	8.28
EQUIPMENT	ACRE	1.60	1.00	1.60
TRACTOR	ACRE	1.80	1.00	1.80
TOTAL FIXED EXPENSE				11.68
TOTAL SPECIFIED EXPENSES				66.25
NET RETURN				-66.25

Table 25. Estimated annual maintenance costs (excluding forage and supplemental feed) for a 25-cow unit cow/calf herd at the MAFES Black Belt Branch Station calculated at 1980 prices.

Item	Unit	Quantity	Price/ unit	Amount
Direct Expenses				
Veterinary and Medicine	head	30	6.32	189.60[a]
Salt and Minerals	cwt	6.8	5.00	34.00
Labor	hrs	136	3.10	421.60
Interest on Operating Capital	herd	1	64.52	64.52
Total Direct Expenses				709.72
Fixed Expenses				
Interest on Investment	herd	1	1205.00	1205.00[b]
Total Specified Expenses				1914.72

[a] ($.58 x 20 + .42 x 10) x 12 months

[b] $12,050 herd value based on 25 cows @ $450 each and one bull @ $800.

Table 26. Estimated cost and return per acre for fall- and spring-calving cow-calf operations on three forage systems at the MAFES Black Belt Branch Experiment Station, 1976, 1977 and 1978, calculated at 1980 prices.[a]

	Alicia	Coastal	Common[b]
Direct expenses			
Herd maintenance (Table 25)	28.39	28.39	21.29
Supplemental feed[c]	73.58	73.58	61.31
Pasture maintenance (Tables 22B, 23B, and 24B)[d]	96.03	96.03	84.96
Fixed expenses			
Interest on herd investment (Table 25)	48.20	48.20	36.15
Pasture maintenance (Tables 22B, 23B, and 24B)[d]	19.28	19.28	18.43
Total specified expenses	265.48	265.48	222.14
Returns (Value of weaned calves)[e]	310.53	307.13	254.36
Returns above specified expenses @ 100% conception rate	45.05	41.65	58.79
Returns above specified expenses @ study conception rates[f]	-38.79	-32.06	-39.00

[a] Stocked at 1 cow/acre except as noted.

[b] Stocked at 3/4 cow/acre.

[c] Prices used: hay @ $60/ton, silage @ $15/ton, CSM @ $220/ton, and DPW @ $60/ton.

[d] One acre base forage plus 1/3 acre fescue.

[e] Three-year average weaning weight/calf x $85/cwt, adjusted for stocking rate. (Assumes 100% calf crop)

[f] Returns adjusted for calving percentage.

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