Winter Pastures for Beef Cattle on Heavy Bladen and Associated Soils of the Southeast

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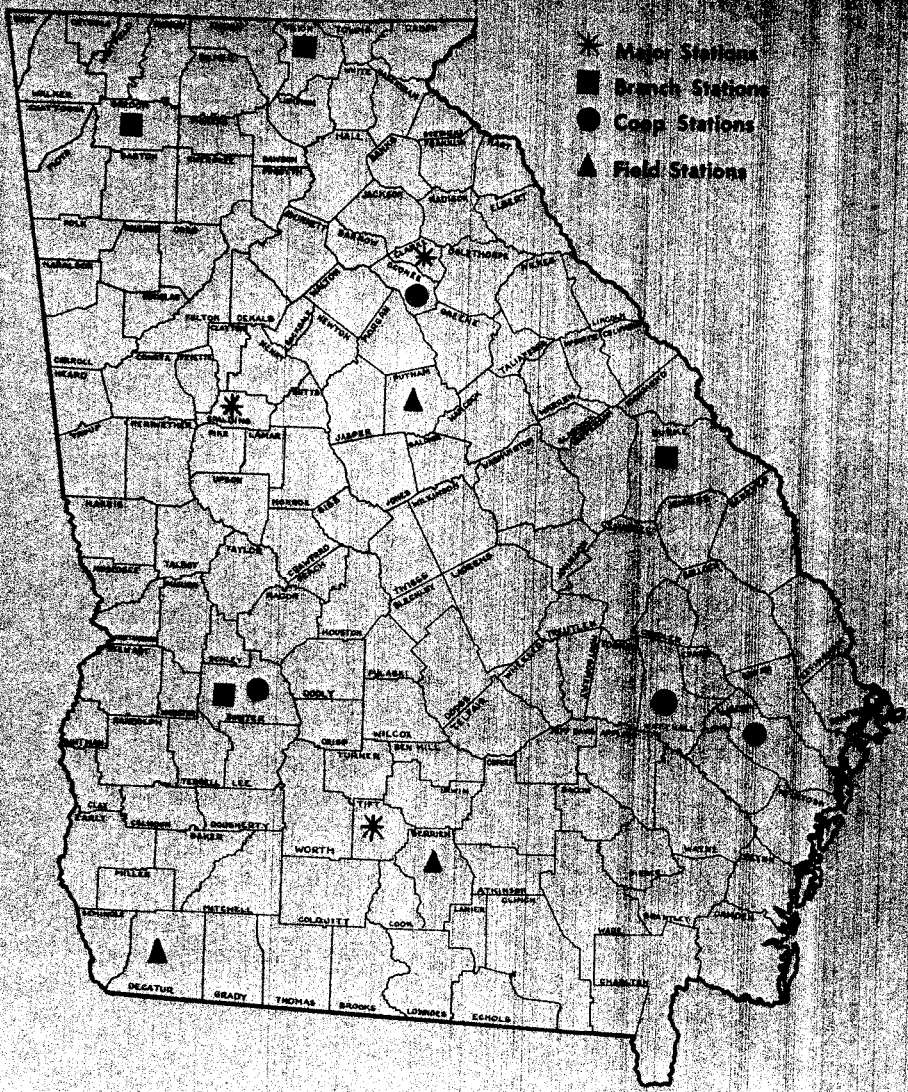
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Cover Photo: Cows grazing Fescue, Ladino clover, December 1964.

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Introduction

In the southeastern Coastal Plain there are approximately two million acres of Bladen and associated soils. They are found along the coast from Virginia into Florida and usually do not reach more than 30 or 40 miles inland. The Bladen soil is a clay loam, which is slowly permeable and has a highly plastic subsoil. It has excellent water holding capacity and is somewhat difficult to manage. This area is generally in timber but grows grass and clover very well.

An experiment was begun in 1960 at the Tidewater Experiment Station, which has predominately Bladen type soil, to compare certain winter growing forage crops, and to develop a system using these forage crops for wintering brood cows. Summer grasses such as Coastal bermudagrass, bahiagrass, dallisgrass and others grow well on these soils. Since cultivation is not practical in the area, sod-seeding on the summer pastures or the production of permanent crop combinations that grow best in winter were used.

Experimental Procedure

The winter crops used and compared in this study were a mixture of Kentucky 31 fescue and ladino clover, sod-seeded Abruzzi rye, sod-seeded Italian ryegrass and a small acreage of volunteer crimson clover. Most of the sod-seeded areas contained small amounts of volunteer crimson clover which furnished some grazing in the late spring. The fescue and ladino clover mixture was estab-

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lished in the fall of 1960 and an additional small amount in the fall of 1963. In each case the mixtures were grazed the following spring. The Abruzzi rye and Italian ryegrass were seeded annually on Coastal bermudagrass and bahiagrass sods in late October or early November with a grassland drill using an 11 inch shoe spacing. Two bushels of rye or 25 pounds of ryegrass seed per acre were planted.

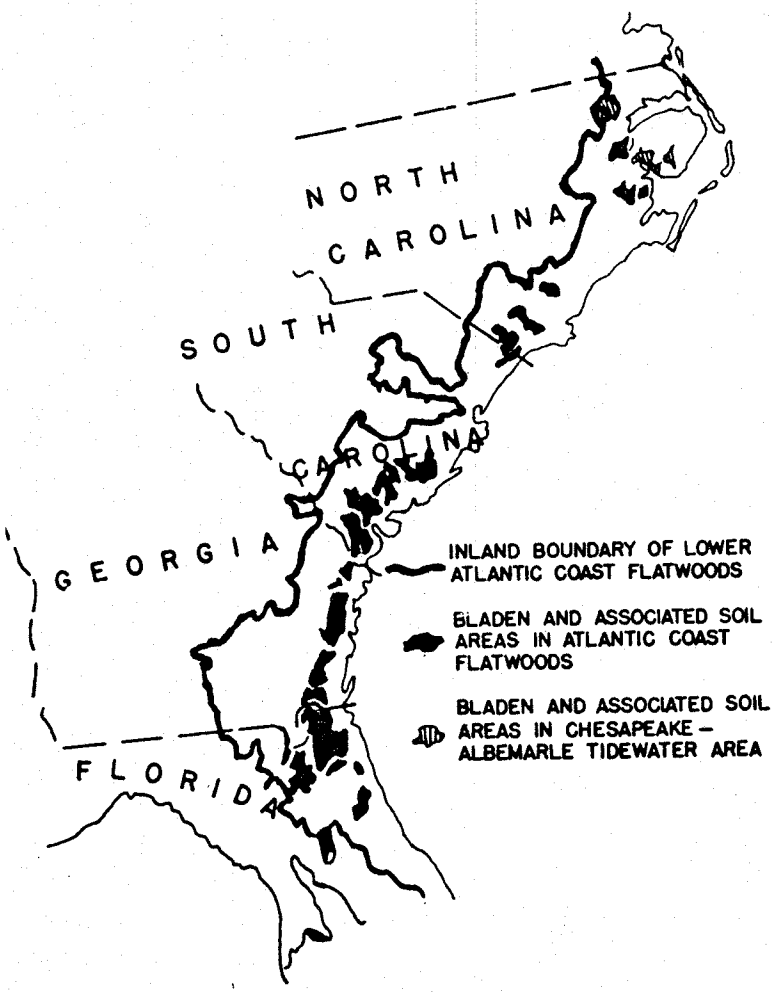

Figure 1. General occurrence of Bladen and associated soils in the Atlantic Coast flatwoods.

An average of 500 pounds of a 4-12-12 fertilizer mixture and 325 pounds of ammonium nitrate (33.5% N) per acre were applied to the sod-seeded crops at planting. The fescue and ladino clover mixture was fertilized with an average of 550 pounds of 4-12-12 per acre in September and 350 pounds per acre of ammonium nitrate in the early fall. In the sod areas where only volunteer crimson clover was grown, 450 pounds per acre of an 0-14-14 fertilizer was applied.

The various crops or crop combinations were evaluated on the basis of animal grazing days per acre and per year. Rotation grazing was practiced in these tests and the cows always had enough grazing for about one-half pound daily gain for the dry cow or enough for body maintenance, and good milk production for the cow suckling a calf. If enough grazing was not available for this kind of performance the cows were removed from the pasture and full fed hay until enough grass growth became available. Only the brood cows were reckoned with in calculating grazing days; the calves were not included in the calculations. An estimate of the amount of forage produced by the various crops or crop combinations was obtained by clipping caged areas at approximately monthly intervals throughout the growing season. The forage from these clippings was dried, weighed, and yields calculated to a 16 per cent moisture basis.

The cows used in this experiment were either grade Hereford or grade Angus or a mixture of the two. Each year the cows were exposed to Hereford bulls during a 100-day breeding period. They were bred to start calving in early January. The calves were weighed at birth and at intervals throughout the summer. Male calves were castrated when one or two days old. The calves were weaned during the latter part of September or early October. The cows were managed as one group during the winter. They were given access to the various forage crops when available and were rotated from one pasture to another as deemed wise. Usually they were permitted to consume most of the available forage on a particular pasture, but efforts were made to avoid close grazing. Only good Coastal bermudagrass hay was fed when grazing was not available. This averaged .8 ton per cow per year. Water, salt and a mineral mixture were available to the animals at all times. In the spring the cows, with their calves, were again divided into two breeding groups of approximately the same size, designated as herds A and B. In the summer one herd grazed Coastal bermudagrass and the other bahiagrass, most of which was of the Pensacola

variety. The herds were alternated each year on the two summer grasses.

Results and Discussion

Winter Management and Animal Performance

Initial grazing dates for the various winter crops in this test are shown in Table 1. Grazing was begun on the fescue and ladino clover in November, except in 1963 when exceptionally dry weather in October and November and low temperatures in December retarded the growth of the fescue and grazing was delayed until mid-December. Normally the late October or early November sod-seeded Abruzzi rye produced sufficient forage for grazing by mid-January and ryegrass a month later. In these tests, grazing was begun when the rye or ryegrass reached a height of approximately 6 to 8 inches. Grazing from crimson clover was usually not available until mid-March.

Table 1. Initial grazing dates of the various winter pasture crops.

Crops	1961	1962	1963	1964	1965	Average date
Winter Pastures						
Fescue and ladino clover	11/16	11/1	12/19	11/16		11/20
Sod-seeded rye		1/15	1/14	1/14	1/14	1/14
Sod-seeded ryegrass		2/12	2/15	2/14	2/17	2/14
Crimson clover		2/28	3/21	3/20	3/23	3/16

Figure 2. Cows grazing fescue-ladino mixture, December 24, 1964.

The average number of animal grazing days per acre per month from the winter forage crops is shown in Table 2. The management practices used influenced the number of animal grazing days per month obtained from the fescue and ladino clover.

The fescue-ladino clover mixture accumulated growth during late summer and fall and was grazed heavily in late fall and early winter because the sod-seeded crops were not ready. This mixture was also grazed intermittently during the winter and early spring. Grazing from the mixture complemented the grazing from the sod-seeded crops and crimson clover. Sod-seeded Abruzzi rye grew off faster than did ryegrass and, consequently, furnished more feed in January and February. Efforts were made to utilize these crops to best meet the feed needs of the cattle during the late fall and during the winter months.

The total acreage of winter feed used by an average of 52 brood cows was 60 acres. The crops were 13 acres of sod-seeded Abruzzi rye, 16 acres of sod-seeded ryegrass, 9 acres of volunteer crimson clover and 22 acres of fescue-ladino clover mixture. Slightly more than one acre of these crops plus .8 ton of Coastal bermudagrass hay was utilized by the brood cow and her calf from late November to early May.

The number of animal grazing days furnished by the various winter forage crops is presented in Table 3, and the yield of dry forage as determined by clipping caged areas is presented in Table 4.

Table 2. Average number of animal grazing days per acre obtained each month from winter forage crops during a four-year period.

Forage Crop	Acres	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Total
		———	———	———	animal	grazing	days	———	———
Fescue and ladino clover	22	27	19	16	5	11	24	10	112
Sod-seeded Abruzzi rye	13			16	28	18	17*	8*	87
Sod-seeded ryegrass	16				14	17	22	16	69
Volunteer crimson clover	9					17	13	7	37

*Most of this grazing was from volunteer crimson clover.

Table 3. Animal grazing days per acre from winter forage crops.

Forage Crop	Acres	Winter 1961-62	1962-63	1963-64	1964-65	Average 4 years
		———	——— animal	grazing	days	———
Fescue and ladino clover	22	108	115	97	127	112
Sod-seeded Abruzzi rye	13	93	99	80	77	87
Sod-seeded ryegrass	16	74	65	64	74	69
Volunteer crimson clover	9	57	39	19	35	37

Table 4. Yield of dry forage as determined by clipping caged areas.

Forage Crop	Acres	Winter 1961-62	Winter 1962-63	Winter 1963-64	Winter 1964-65	Average 4 years
		tons per acre				
Fescue and ladino clover	22	4.48	3.95	3.21	3.67	3.83
Sod-seeded Abruzzi rye	13	2.20	2.43	1.93	2.06	2.16
Sod-seeded ryegrass	16	1.69	1.94	1.42	2.09	1.78
Volunteer crimson clover	9	1.54	1.14	0.71	1.57	1.24

These data showed that the tall fescue-ladino clover mixture produced more winter grazing and higher forage yields per acre than either sod-seeded Abruzzi rye or sod-seeded ryegrass and much more than volunteer crimson clover. In most years, the fescue and ladino clover combination produced a large quantity of forage by early November, a time when other forage was scarce. Fescue and ladino clover also grew well in the spring and furnished grazing after the sod-seeded Abruzzi rye was no longer productive. This forage combination on Bladen soil could provide grazing throughout the winter, if sufficient acreage were available. The results from this experiment indicate that approximately one and one-half acres of the fescue-ladino clover mixture would be required to maintain a brood cow and her calf from early November until May without any other supplemental feeding.

Sod-seeded Abruzzi rye produced more forage and grazing than sod-seeded Italian ryegrass in this experiment. The rye sod-seeded in early November furnished grazing by mid-January, and

Figure 3. Cows and their calves on sod-seeded Abruzzi rye, January 1963.

the ryegrass was ready for grazing approximately 30 days later. The ryegrass produced forage later in the spring. A longer grazing period was, of course, obtained by the use of the two crops than would have resulted if only one of these crops had been used. The date that these crops can be sod-seeded is determined, to a large degree, by the soil moisture present and the amount of grass residue on the ground. The summer pastures were grazed until the first part of November; hence, sod-seeding was not practical until the last part of October or the first part of November. Earlier seeding would have resulted in some earlier grazing, depending on soil moisture and the amount of summer grass stubble present.

The summer grasses had to be either grazed off or mowed off by late October to satisfactorily do sod-seeding. Frosted summer grass could furnish some feed for brood cows in November and December but to follow this practice would eliminate sod-seeding. Sod-seeding Abruzzi rye and particularly ryegrass delayed the spring growth of the summer pastures to the extent that they did not furnish normal amounts of forage until mid-May.

Abruzzi rye and ryegrass were seeded on Coastal bermudagrass and bahiagrass sods with equal success when the bahiagrass sod was young. When these crops were seeded on old bahiagrass pastures, on which a thick sod had formed, neither the Abruzzi rye nor ryegrass was successful. This was not true with seedings on old Coastal bermudagrass sod.

The cows wintered well in this system and at no time were they too thin in flesh. The green grazing stimulated milk production which gave the calves a good start. In many instances, in this wintering test, the cows had more feed than was needed but it was impractical to limit the grazing by removing them daily from the pastures.

A four-year average of an 81 per cent calf crop was weaned by the cows in this test. An approximately 86 per cent calf crop was born. This group of cows was assembled at the beginning of the study and a few proved to be poor in reproductive efficiency. It is believed that none of this was due to either winter or summer feed or management. The 169 calves weaned had an average birth weight of 64 pounds and an average 232-day actual weaned weight of 432 pounds. The average daily gain of the calves from birth to weaning was 1.58 pounds.

Figure 4. End of sod-seeded winter grazing period, April 1961.

Summer Management and Animal Performance

Coastal bermudagrass and bahiagrass for summer grazing had been compared previous to this test and both had been found well adapted to the heavy Bladen soil. There was little difference in liveweight gains per acre produced by the two grasses when fertilized with an average of 380 pounds of 4-12-12 per acre in April or May plus 265 pounds of ammonium nitrate in early June, which was the practice in this test.

The brood cows and their calves were carried on these grasses during the summer and these were the same acres that had furnished winter grazing from sod-seeded Abruzzi rye and ryegrass. There was very little difference in the performance of the cows and their calves carried on these two grasses.

Year-round Management

The average acreage required to carry 52 brood cows year-round and their calves during the suckling period only (January to late September) was 84 acres or 1.6 acres per cow. The crop distribution on this acreage was as follows:

Coastal bermudagrass pasture (sod-seeded)	21 acres
Bahiagrass pasture (17 acres sod-seeded)	20 acres
Kentucky 31 fescue and ladino clover	22 acres
Coastal bermudagrass for hay	21 acres
Total acreage	84 acres

Most of the Coastal bermudagrass and bahiagrass areas were double cropped; that is, they supplied grazing during the summer (May to October) and produced either sod-seeded crops or volunteer crimson clover during the winter. Hay production on the 21 acres of Coastal bermudagrass averaged 4 tons per acre per year or 84 tons total. On the average only 42 tons were required for the cows for winter feeding, leaving 42 tons for sale. Forty-one acres of these two summer grasses carried the 52 cows and their calves (.8 acre per cow and calf) from May to October.

Summary

Areas of a tall fescue-ladino clover mixture, sod-seeded Abruzzi rye, sod-seeded Italian ryegrass, and volunteer crimson clover were developed into a system and were compared for a four-year period as sources of winter grazing for commercial brood cows. The study was done on heavy Bladen and associated type soils which are slowly permeable, have a highly plastic subsoil, have excellent water holding capacity but are difficult to manage. These crops were evaluated by the number of animal grazing days per acre each furnished, the season grazing was available, and by total forage yields. The fescue-ladino clover mixture furnished an average of 112, sod-seeded Abruzzi rye 87, sod-seeded ryegrass 69, and volunteer crimson clover 37 animal grazing days per acre. The average yield of dry forage (16% moisture) from these crops (as determined by clipped caged areas) was 3.8, 2.2, 1.8 and 1.2 tons per acre, respectively. In addition, the sod-seeded and crimson clover acres furnished summer pasture.

The average date that sufficient forage was available for grazing from these crops was November 20 for the fescue-ladino clover mixture, January 14 for sod-seeded Abruzzi rye, February 14 for sod-seeded ryegrass and March 16 for volunteer crimson clover. Cows were fed good Coastal bermudagrass hay during the winter when grazing was not available. This required .8 ton per cow per winter.

Sod-seeding was done on Coastal bermudagrass or bahiagrass pasture, which pastures furnished summer grazing for the brood cows and their calves. Forty-two acres of these crops carried 52 cows and their calves (.8 acre per cow and calf) from May to October.

The average acreage required to carry 52 brood cows year-round and their calves during the suckling period only was 84 acres or 1.6 acres per cow. The cows weaned an 81 per cent calf crop in this system. The 169 calves weaned in the four-year study had an average weaned weight of 432 pounds with a daily gain of 1.58 pounds from birth to weaning.