

Ryegrass Pasture for Supplementing Southern Pine Native Range

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Cattle grazing southern pine range are managed primarily as cow-calf operations. Brood cows, predominantly Brahman crossbreeds, generally graze yearlong. Several studies have shown deficiencies in native forages meeting the nutrient requirements of beef cattle, especially during winter. Protein and energy deficiencies for breeding cattle seriously reduce calf crops and weaning weights. Several feeding alternatives such as cottonseed cake and hay, liquid supplements, or supplemental winter pasture exist for improving animal production and economics. This paper reports results from grazing supplemental ryegrass pastures in conjunction with native bluestem range.

A study was conducted on effectiveness of a small acreage of supplemental ryegrass pasture in meeting winter nutritional needs of cattle grazing native southern pine range yearlong. We also compared the economics of strip and open grazing of supplemental ryegrass pastures.

The study was conducted on two 570-acre range units of the Palustris Experimental Forest in central Louisiana. The vegetation and soils are representative of the longleaf-slash pine type of central Louisiana. Since 1951 cattle numbers have been regulated to obtain moderate yearlong grazing (40 to 50 percent use of the current year's herbage).

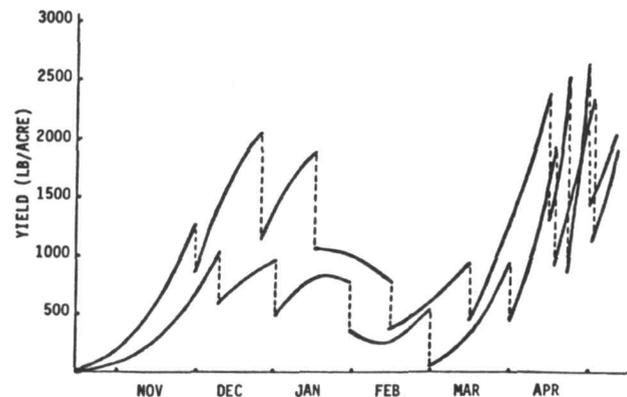
Each range unit was cross-fenced into 2 subunits of equal carrying capacity, i.e., about 15 head per subunit. The range units had some direct-seeded longleaf pine, several plantations of slash and loblolly pines, plus a scattering of oaks.

A 10-acre pasture was established on 1 subunit of each range unit in 1977. Half the cattle in each herd were randomly assigned to the subunits with the supplemental pasture while those in the other subunit received cottonseed meal. In the fall of 1981, herds in the 2 subunits were combined into 1 herd in each range unit and all cattle grazed the ryegrass supplemental pasture. In November 1982 1 of the 10-acre pastures was divided into 12 strips using a solar-powered electric fence and the cattle grazed the strips in rotation each winter through 1985. Typical crossbred Brahman cows grazed the forest-range. Purebred Hereford or Angus bulls serviced the cows, and calves were born from December through March, then weaned and marketed in mid-August.

Salt and steamed bonemeal were provided free-choice yearlong. One third of each range unit was rotationally burned each year in February to provide rotation of forage utilization and fresh palatable forage each spring.

The ryegrass supplemental pastures were seeded to bahiagrass in the spring of 1978, providing creep grazing during

summer for the calves and a hay source for winter feed or to sell if not needed. Following the last cutting of hay in September, the cattle closely grazed the bahiagrass to reduce competition between the 2 grasses. In early October each year approximately 300 lb/acre 8-24-24 (N-P-K) fertilizer and 40 lb/acre Gulf ryegrass seed were drilled into the sod or disked pasture; the first year only, 3 lb/acre Louisiana S-1 white clover was seeded with the ryegrass.



Ryegrass yields and cattle use for sod seeded (lower line) and disked (upper line) strip grazed pasture. Vertical dashed lines denote forage removal by grazing.

Successful establishment of ryegrass depends upon adequate fall moisture and control of competing warm-season grasses. To minimize this problem, beginning in 1979 a seedbed was lightly disked prior to October to reduce the bahiagrass competition. In order to take advantage of the warm days and to boost fall production of ryegrass, 200 lb/acre ammonium nitrate was applied on the well-established ryegrass stand in November. Then another 200 lb/acre was applied in early to mid-February to take advantage of the warm days in February and March. An additional 150 lb/acre was applied in April for ryegrass hay harvest in May. Two tons of dolomitic limestone was applied every 5 years to maintain a pH 6 or higher.

Grazing was initiated when the ryegrass was 6-8 inches high and generally was programmed for 3 days per week for 3 to 4 hours each grazing day. Cows grazed the surrounding native forest range during the remainder of the time.

Ryegrass utilization and production was determined from plots (9.6 ft² each) located throughout the pasture. Forage samples were also analyzed for crude protein and phosphorus.

Ryegrass yields exceeded 5 tons/acre during the year of establishment. Crude protein content of ryegrass averaged 23% from December through April; phosphorus averaged 0.26% during this same period.

Ryegrass production was adequate for grazing the breeding herd during 6 of the 7 years of study. Although 1 herd in

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Table 1. Cattle production from ryegrass pasture grazed thrice weekly.

Year	Range Unit	Total* Cattle	Calf Crop	Calf Sale Weight	Calf Sale Price
	(No)	(No)	(%)	(lb)	(\$/cwt)
1977-78	1	15	**	455	55
	2	14	**	429	59
-79	1	15	93	****	****
	2	14	77	****	****
-80	1	16	**	474	69
	2	14	**	404	73
-81	1	16	100	467	62
	2	16	***	447	62
-82	1	32	94	417	65
	2	29	100	464	62
-83	1	41	85	409	58
-84	1	27	85	418	59
-85	1	34	85	392	61
	AVERAGE		90	434	62

*Includes cows, bulls, and non-breeding livestock.

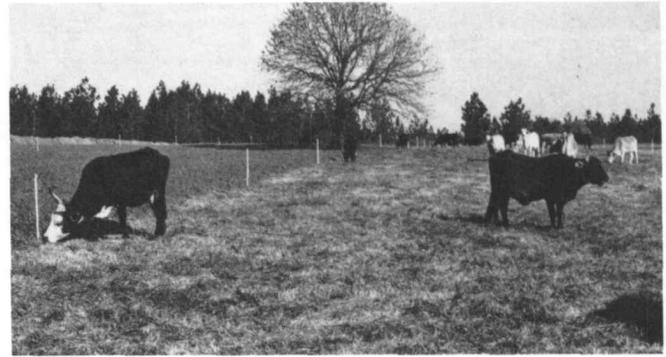
**Ryegrass not available prior to and during breeding season.

***Bull fertility problems.

****Ryegrass not available postpartum.

1980-81 had bull fertility problems, all other herds on ryegrass had weaned calf crops that averaged 90 percent. Weaning sale weights averaged 434 lb. We concluded that a small acreage of ryegrass pasture is effective in supplementing winter nutritional needs of breeding cattle that graze native southern pine range yearlong. However, other backup supplements such as cottonseed meal and hay or liquid supplement must be readily available for years when ryegrass establishment is unsuccessful or when cold temperatures retard ryegrass growth.

From 1977 through 1982 the 10-acre ryegrass pasture provided sufficient forage for open grazing of about 25 cows. Beginning in the 1982-83 supplement season we strip-grazed the ryegrass pasture. The cattle were allowed to graze 1 of 12 strips (each 0.8-acre) for 3 to 4 hours and then returned to the native forest range. Grazing 3 strips each week allowed 28 days of rest before repeat grazing occurred on the same strip. Initially 31 cows grazed the strips; in



Ryegrass pasture strip-grazed using a solar-powered electric fence.

mid-January 1983 the herd was increased to 40 cows. The strip grazing allowed the ryegrass to accumulate in the pasture for use during the slow growth period in January and February by distributing use on the pasture and minimizing trampling damage.

Ryegrass yields were higher with disking (8,458 lb/acre) compared with sod-seeding (5,666 lb/acre) in the bahia-grass. Growth rate in the fall and early winter of ryegrass with disking about doubled rates with sod-seeding. Growth rates of ryegrass in late winter and spring were more similar for both treatments. Due to the reduced growth rate of ryegrass in winter, care must be taken not to reduce the ryegrass too much in late fall and early winter if the ryegrass is expected to sufficiently supplement the herd throughout the winter.

The cost/cow for winter supplementation with ryegrass pasture was reduced through strip-grazing as compared with open-pasture grazing. Yearly costs for the 10-acre ryegrass pasture without subdivision was \$1,357. Solar powered electric fences were installed in the ryegrass pasture for a cost of \$1,798; costs prorated over a 10-year period (except for the 5-year prorated poly-wire) give an average yearly cost of \$198, or a total cost for strip grazing of \$1,555. Since the grazing capacity was increased from 25 to 40 cows, the costs decreased from \$54/cow with open-pasture grazing to \$39/cow with strip-grazing.

Table 2. Ryegrass pasture yearly costs (10 ac)

Item	Application Date	Amount	Unit Price	Cost
Land rent	annually	10 ac	\$ 15.00/ac	\$ 150
Exterior fence (20-yr dep.)	1977	0.5 mi	2000.00/mi	50
Seedbed preparation	Sep. 1-30	10 ac	25.00/ac	250
Dolomitic limestone	Sep. 1-30	400 lb/ac	1.45/cwt	58
Ryegrass seed	Oct. 1-10	40 lb/ac	22.00/cwt	88
Fertilizer (8-24-24)	Oct. 1-10	300 lb/ac	10.50/cwt	315
Ammonium nitrate	Nov. 20-Dec. 5	200 lb/ac	8.10/cwt	162
Ammonium nitrate	Feb. 10-25	200 lb/ac	8.10/cwt	162
Ammonium nitrate	Apr. 1-15	150 lb/ac	8.10/cwt	122
Total (without strip-grazing)				1357
Additional strip-fencing costs (solar unit, energizer and battery—\$726, poly wire—\$182, reels and posts—\$636, other accessories—\$254)				198
Total (with strip-grazing)				1555
Cost/cow (\$1357/25 cows) open pasture grazing				54
Cost/cow (\$1555/40 cows) strip-grazing				39