FORAGE-LIVESTOCK FIELD DAY REPORT - 1998

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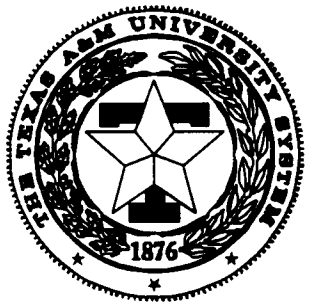

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CONTINUOUS *VS* ROTATIONAL GRAZING OF RYE-RYEGRASS PASTURES AT THREE STOCKING RATES

F. M. Rouquette, Jr., J. L. Kerby, G. H. Nimr, B. G. Warrington, and J. W. Holloway

Background. A cooperative grazing experiment between TAMU-Overton and Uvalde using F-1 (Brahman x Hereford) cows produced Simmental-sired (Overton) and Angus- or Limousin-sired (Uvalde) calves for both pre- and post-weaning studies. Calves born primarily from mid-January to late March were weaned in October and randomly allocated in November to a grazing method x stocking rate experiment. Grazing methods were continuous stocking and an 8-paddock rotation. Stocking rates ranged from 1.5 to 3.0 600-lb stocker steers and heifers per acre. Calves were initially rotated at about 2-day intervals with some residence time adjustments based on available forage. Three to four replicate pastures of each treatment were employed using 6 calves (3 steers and 3 heifers) per pasture. The primary objective of this experiment was to compare method of grazing, stocking rate, and origin of calf on gain per animal and gain per acre.

Research Findings. Grazing on all sod-seeded 'Elbon' rye-'TAM 90' ryegrass pastures began on November 20, 1996. Inclimate cold temperatures, combined with indiscriminant loss of stand of both rye and ryegrass created a need to terminate grazing on all pastures on January 17, 1997, due to a lack of forage on most all paddocks except the low stocked pastures. Grazing was resumed on March 3 and continued until May 22, 1997. Thus, data will be shown for both the November-May period and the March-May period. Analyses of this single year data set showed no differences in average daily gain (ADG) between grazing method (continuous *vs* rotational) for the November-May period, but did show an advantage in ADG ($P<.0002$) for continuous stocking over rotational stocking for the spring period (March-May). Since there was no difference in ADG between the origin of cattle (breed types), these data are combined for stocking rate analyses (Table 1). Differences in stocking rate between continuous *vs* rotationally grazed pastures at any one stocking level were products of climate, pasture size, and management. The trail-long average stocking rate was, therefore, higher on rotationally grazed pastures due to additional forage available from the graze-rest method. Gain per acre from November to May period was greatest for low stocked, rotationally grazed and either system of medium stocking rate at about 500 lbs/acre. Considering only the March-May period, both grazing methods of medium stocked pastures produced the highest gains per acre at about 430 lbs/ac.

The most dramatic effects on ADG were due to stocking rate ($P<.0001$), sex of calf ($P<.002$), and the interaction of grazing method x stocking rate interaction ($P<.01$). Table 2 illustrates the

interaction of stocking rate on both grazing methods. On continuously grazed pastures, ADG of high stocked calves was lower than both medium or low stocked pastures which were similar in ADG. Calf ADG from rotationally grazed paddocks was different for each of the three stocking rates. Steers gained more than heifers on any combination of treatments. The ADG during the March-May period was within the range of expectations. However, the 6-weeks of non-winter pasture grazing (hay + supplement) from January 17 to March 3 significantly reduced the overall ADG from pre-trial expectations of 2.5 lb/d on low stocked to 1.5 lb/d. This pound-a-day reduction in gain during a 180-day grazing period was biologically and economically devastating.

Application. Efficient forage utilization is management-dependent and may be accomplished with a wide array of grazing methods which are producer-preference oriented. Stocking rate is one of the primary considerations associated with efficiency of forage use and animal performance. In this one-year study, an initial stocking rate of 1.5 600-lb calves (900 lb/ac) (low stocked) was an appropriate stocking density to avert risk of climate. Small grain-ryegrass pastures in East Texas have a bimodal growth curve which often creates 2 or 3 distinctly different stocking densities that would optimize forage utilization. This experiment was a good example of the need to be prepared to de-stock pastures during periods of adverse growing conditions, and the need to increase stocking density during the March-May period.

Table 1. Performance of cattle grazing continuously and rotationally at three stocking rates.

	Grazing Method	Stocking Rate	Average Daily Gain		Gain per Acre	
			Nov-May	Mar-May	Nov-May	Mar-May
		AN/ac	lb/d	lb/d	lb/ac	lb/ac
LOW	CONT	1.31	1.56	3.14	375	330
	ROTN	1.63	1.72	2.97	514	388
MED	CONT	1.83	1.47	3.00	490	438
	ROTN	2.27	1.30	2.31	535	419
HIGH	CONT	2.76	0.80	1.62	402	357
	ROTN	2.98	0.75	1.45	409	346

Table 2. Effect of grazing method and stocking rate on average daily gain.

	GRAZING METHOD			
	CONTINUOUS		ROTATIONAL	
ITEM	----------Daily Gain (lb/d)----------			
Stocking Rate	Nov-May	Mar-May	Nov-May	Mar-May
Low	1.56 a[1]	3.13 a	1.72 a	2.96 a
Medium	1.46 a	3.00 a	1.29 b	2.31 b
High	0.79 b	1.61 b	0.75 c	1.45 c

[1]Numbers within a date column followed by a different letter, differ significantly at P<.001.