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INTENSIVE GRAZING SYSTEMS FOR BEEF CATTLE PRODUCTION

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Abstract

The objective of this study was to compare grazing systems that used rotational and continuous stocking for beef cows-calves and stocker cattle grazing fescue (*Festuca arundinacea*) and clover (*Trifolium repens*). For each system seven cows/calves and seven stocker steers were used within each of two replicates. The cows and stockers grazed stockpiled forage and were fed hay in winter, and grazed growing forage during spring and summer. Cows in the rotational system gained at a faster rate (P<. 05) from October to April than those in the continuous system. Daily gains of calves were higher (P<. 05) for the continuous system. Rate of gain during the last 28 days was higher (P<. 05) for the stockers in the rotational system. Average hay yields were not different for the two stocking systems, but more (P<. 05) hay was fed to the cattle in the continuous system. The system that used continuous stocking was more easily managed and required less labor and facilities.

Keywords: Rotational stocking, continuous stocking, fescue, cattle, grazing methods

Introduction

Forages are the main sources of feed for beef cattle production prior to feedlot finishing. In beef grazing usually ingests cow-calf and stocker systems forages. A grazing system is a defined, integrated combination of animal, plant, soil and other environmental components, and the grazing method(s) by which the system is managed to achieve specific goals (Forage and Grazing Terminology Committee, 1991). Rotational and continuous stocking are examples of grazing methods. Results comparing these two grazing methods have not been consistent (Matches and Burns, 1995). In recent years there has been increased interest in rapid rotation grazing. Comparisons of this grazing method with a well-managed continuous grazing method are limited. An experiment was conducted during 5 yr. to compare intensive grazing systems in which continuous and rotational stocking methods were used for cow-calf and stocker cattle.

Materials and Methods

Two year-round systems, replicated twice, were developed for cows-calves and stockers grazing tall fescue-clover. In one system continuous stocking was used and in the other system the cattle were grazed rotationally. The fescue was 51% infected with the fungus *Neotyphodium coenophialum* [(Morgan-Gams) Glenn, Bacon, and Hanlin]. The clover was mainly white clover.

Cows calved in late February to early April and were weaned in October. Stocker steers were placed on experiment in October and sold the following August, which reduced stocking rates and allowed more forage for growing calves.

For each system seven cows/calves and seven stocker steers were used for each system within the two replicates. Land area was 7.1 ha for each grazing system in each replicate. Thus, 28.4 ha were used for the entire experiment. Fertilizer was applied according to soil tests. For

each system excess forage in the spring was harvested and preserved as sun-cured hay. Nitrogen was applied to about 55% of the area in August for stockpiling of fescue. The cattle grazed the entire year except if forage supply was limited in late winter or if the pastures were covered with ice or hard-packed snow. Trace mineralized salt and water were available throughout the year. The cattle were weighed at 28-day intervals, except cows were not weighed during the calving season.

The continuous grazing system included four paddocks. During the winter, cows grazed stockpiled fescue-clover and were fed hay when needed. The stockers grazed stockpiled fescue and were fed hay when needed in separate paddocks from the cows. In the spring hay was harvested from the paddocks which had been stockpiled. After hay was harvested, stockers grazed and calves creep grazed in the paddocks, which had been stockpiled while cows, grazed the base-paddock.

For the system that used rotational stocking the main grazing area was divided into 16 paddocks. The forage was stockpiled starting in August in eight paddocks. During the winter the cow's strip grazed these eight paddocks. Likewise, the stocker steers strip grazed five paddocks apart from the cows. Hay was fed to cows and stocker steers when needed. During spring and summer the cattle grazed rotationally. The stockers were the first grazers and the cows were the second grazers. The calves creep grazed with the stocker steers. Forages were sampled at 28-day intervals for chemical analyses. The data were analyzed by analyses of variance by methods outlined by SAS (1995).

Results and Discussion

Cows in the rotational system gained more weight ($P<.05$) from October to April than those in the continuous system (Table 1). There was no significant difference in pregnancy rate.

Calf birth weights were similar for the two systems. Average daily gain of calves up to weaning were higher (P<. 05) for the continuous stocking. There was no consistent difference in internal parasites between the grazing systems and fecal egg counts were low. Gain of the stocker cattle was higher (P<. 05) during the last 28 days for the rotationally grazed system (Figure 1). There was no difference until the last 28 days.

There was no difference in hay harvested from the continuous and the rotational systems (Table 1). However, less (P<. 05) hay was fed during the winter for the rotational system, which appeared to be due to a slightly longer summer grazing season and to more efficient use of stockpiled forage. The difference in hay harvested *vs.* hay fed resulted in a 90 kg per system advantage in surplus hay for the rotational system.

There were no consistent advantages of rotational stocking in cattle performance. Matches and Burns (1995) pointed out that continuously grazed cattle might have access to higher quality forage. Blaser et al (1985) showed better performance by cattle grazing first compared to last grazers, which was undoubtedly due to availability of higher quality forage. Creating more paddocks resulted in increased management demands and additional fencing and watering facilities. The continuously stocked system was a more easily managed system that required less labor and facilities.

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Table 1 - Performance of cows and calves and average hay yield and fed

Item	Grazing method	
	Continuous	**Rotational**
	- - - - - - - - - - - kg - - - - - - - - - - -	
Average daily gain		
Cows, winter[a]	-0.04	0.05
Cows, total	0.15	0.00
Calves[a]	0.90	0.75
Hay yield/system	10,014	9,163
Hay fed/system[a]	6,624	5,683

[a]Indicates difference between continuous and rotational stocking ($P<.05$).

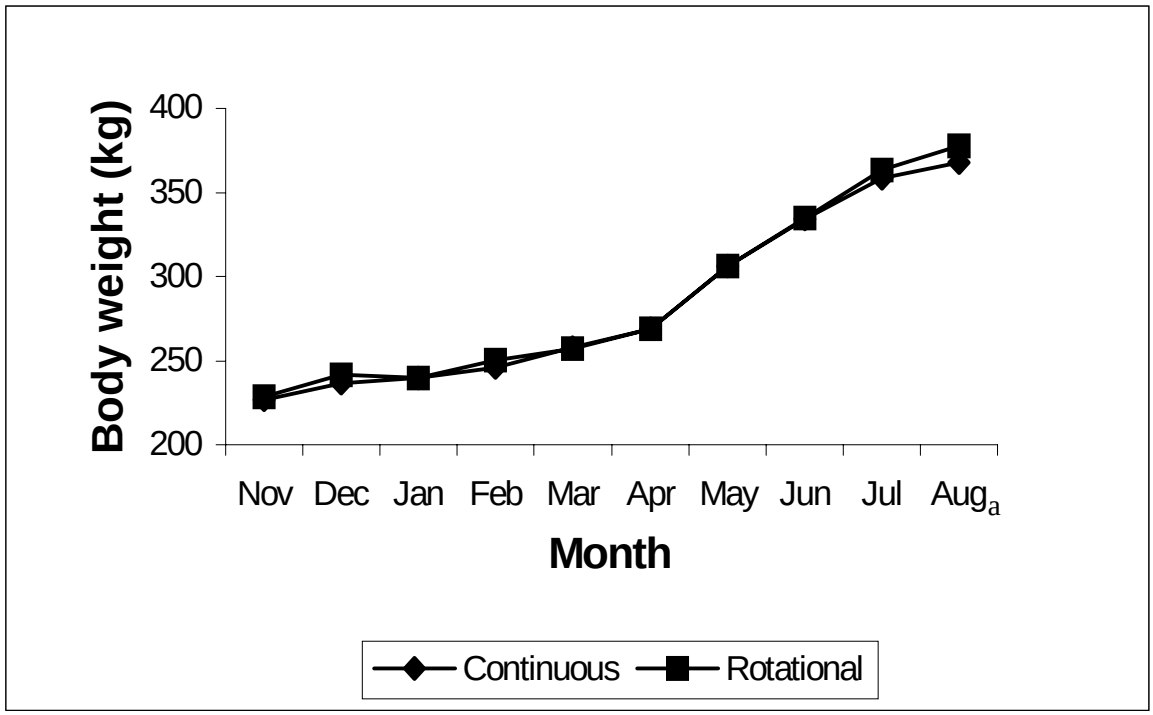

Figure 1 - Performance of stocker steers (5 yr avg.). [a]Difference between the systems (P<.05).