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Abstract

Stocking rate in an intensive-early stocking system (1.25, 1.50, or 1.76 acres per steer) did not influence steer gains. Available forage on loamy upland sites was lower after steer removal on July 15 for the highest stocking rate. However, after late season rest, available forage was similar for all stocking rates. Steer gains were consistently greater for groups implanted with Compudose® (estradiol 78β or Compudose plus a Rumensin® (monensin) ruminal delivery device. The Rumensin device alone was successful in increasing average daily gain only at the highest stocking rate.

Keywords

Cattlemen's Day, 1987; Kansas Agricultural Experiment Station contribution; no. 87-309-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 514; Beef; Compudose®; Rumensin®; Stocking rate; Implants

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Evaluation of Stocking Rate, Compudose® Implants, and Rumensin® Ruminal Delivery Devices within Intensive-Early Stocking

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Summary

Stocking rate in an intensive-early stocking system (1.25, 1.50, or 1.76 acres per steer) did not influence steer gains. Available forage on loamy upland sites was lower after steer removal on July 15 for the highest stocking rate. However, after late season rest, available forage was similar for all stocking rates.

Steer gains were consistently greater for groups implanted with Compudose® (estradiol 17ß) or Compudose plus a Rumensin® (monensin) ruminal delivery device. The Rumensin device alone was successful in increasing average daily gain only at the highest stocking rate.

Introduction

Suggested season-long grazing schemes in the Flint Hills run from May 1 to October 1, with a stocking rate of about 3.5 acres per steer. Grazing cattle for half the season (May 1 to July 15) at twice the normal rate (1.75 acres/steer) increases gain per acre, while maintaining animal performance. This intensive-early stocking (or double stocking) system also may improve range forage composition. Although intensive-early stocking works well at doubled stocking rates, information is limited on animal and plant response to higher stocking rates.

Increased weight gain of pasture cattle receiving Rumensin® has been well documented. However, systems for administering the drug on pasture are inconvenient and do not ensure that each animal receives the correct amount. Recently, the Rumensin ruminal delivery device (RRDD) became available for experimentation.

We evaluated the efficacy of RRDD's alone and combined with Compudose® implants. This was part of a long-term study to determine the influence of increased stocking rates, within intensive-early stocking, on animal and plant response.

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[3]Dept. of Agronomy.

Experimental Procedures

Two hundred and forty-four crossbred beef steers averaging 545 lbs were distributed to six 60-acre tall grass prairie pastures. Stocking rates (2 pastures per stocking rate) were: 1) 1.76 acres/steer; 2) 1.50 acres/steer; and 3) 1.25 acres/steer.

Steers within each pasture were assigned to four treatments: 1) control; 2) RRDD (expected Rumensin release rate, approximately 100 mg/day); 3) Compudose implant; and 4) RRDD plus a Compudose implant. All steers were weighed following an overnight stand without feed or water at trial initiation (April 30, 1986) and termination (July 15, 1986).

Available forage was determined by clipping forage in each pasture within 10 frames (frame size, 1/10,000 acres) per range site. The two range sites were loamy upland and breaks. Forage was clipped immediately after steers were removed (July 15) and again at the end of the growing season (mid-October).

Results and Discussion

Response to Rumensin or Compudose depended on the stocking rate ($P<.05$). At the highest (1.25 acres/steer) stocking rate, RRDD's improved gain ($P<.05$). However, for the lower (1.76 acres/steer) and intermediate (1.5 acres/steer) stocking rates, gains of steers carrying RRDD's were similar to controls ($P>.10$) (Table 29.1). Steers implanted with Compudose, or implanted steers with RRDD's gained more ($P<.01$) than control steers for all stocking rates. We confirmed Rumensin delivery by occassional surgical removal of some RRDD's.

On loamy upland sites, total forage available after steer removal was lower ($P<.06$) for the highest stocking rate than for the lowest rate, but was similar on the intermediate and low stocking rate (Table 29.2). Forage available on the breaks was similar at all three stocking rates. At the end of the growing season, available forage was similar regardless of the previous stocking rate.

Implanting with Compudose resulted in more consistent gain improvements than using RRDD's. However, the Rumensin release rate (100 mg/day) was below the recommended Rumensin feeding level of 200 mg/day, which may partially explain the inconsistent response. Increasing the stocking rate did not reduce average daily gain, and forage production for even the highest stocking rate recovered following late-season rest.

Table 29.1. Influence of Stocking Rate, Compudose Implant, and Rumensin Ruminal Delivery Device (RRDD) on Average Daily Gain of Crossbred Beef Steers Managed within Intensive-early Stocking

Stocking Rate (acres/steer)	Treatment Gains (lbs/head/day)			
	Control	RRDD	Compudose	RRDD + Compudose
1.76	2.2	2.3	2.6[a]	2.6[a]
1.50	2.2	2.2	2.8[a]	2.7[a]
1.25	2.3	2.5[a]	2.7[a]	2.8[a]

[a]Treatment mean differs from control (P<.01).

Table 29.2. Influence of Stocking Rate on Total Forage Available for Loamy Upland and Breaks Range Sites at Mid-summer and Mid-fall

Item	Stocking Rate (acres/steer)		
	1.76	1.50	1.25
Loamy upland - total dry forage production (lbs/acre)			
Mid-summer	1939	1430[b]	976[a]
Mid-fall	2639	2193	2171
Breaks - total forage production (lbs/acre)			
Mid-summer	1588	1290	938
Mid-fall	1956	1576	1566

[a]Treatment mean is different from control (P<.01).

[b]Treatment mean is similar to control (P>.10).