

Evaluation of a Year-Round Grazing System: Summer Cow-Calf Progress Report

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Summary

A comparison was made between two different summer grazing systems. One system was the summer component of a year-round grazing system, involving the rotational stocking of smooth brome-grass--orchardgrass--birdsfoot trefoil pastures and winter stockpiled pastures with cow-calf pairs co-grazing with stocker yearlings at .75 animal units per acre. That system was compared with a minimal land system involving the rotational stocking of smooth brome-grass--orchardgrass--birdsfoot trefoil summer pastures with cow-calf pairs grazing at .64 animal units per acre and hay removal from 25% of the pasture. Stocker yearlings or hay removal were used as management tools to remove excess forage and optimize forage quality. Hay was removed once from three fourths of the winter stockpiled pastures and one fourth of the allocated summer pastures. Cow-calf pairs grazing in the year-round system utilized on fourth of the winter stockpile pastures due to lack of forage, whereas cow-calf pairs grazing with hay removal were supplemented with harvested hay for two weeks during the summer. Grazing system did not affect cow body weight, condition score, or daily calf weight gain. Growing animal production per acre was affected by grazing system, with the minimal land system having a higher production level.

Introduction

The desire to optimize the land base and increase the profitability from cow-calf herds has become increasingly important in recent years. The need to optimize forage utilization and animal productivity has led many to try to increase flexibility in a summer grazing program. This flexibility is often found in a rotational grazing system that incorporates the use of legumes. Because of the ability to fix nitrogen in the soil and their higher nutritive value, legume forage species may increase the yield and quality of forage produced in pastures while requiring little for no

nitrogen in the soil and their higher nutritive value, legume forage species may increase the yield and quality of forage produced in pastures while requiring little or no nitrogen fertilization. Rotational grazing is utilized because legume species may not persist well under continuous grazing conditions. Rotational grazing also offers increased efficiency of forage utilization and productivity, thereby allowing for greater stocking rates.

Hay production during the summer is also an important consideration. Utilization of rotational grazing may allow for hay harvest from summer pastures to control forage growth. An alternative to early season hay removal from summer rotationally grazed pastures is to increase the stocking rate with animals, which may be removed when forage density drops.

The objective of this study was to compare cow body condition score and calf production of cows grazing different stocking systems, utilizing rotational grazing with a hay harvest compared with rotational grazing with yearling stockers and hay harvest from stockpiled hay crop pastures. Changes in the yield and nutritive value of smooth brome-grass--orchardgrass--birdsfoot trefoil pastures and hay, and mixtures of grass legume stockpiled forage and hay were also examined.

Materials and Methods

In February eight existing ten-acre smooth brome-grass--orchardgrass--birdsfoot trefoil pastures were frost seeded with birdsfoot trefoil to re-establish the legume. All pastures were divided into eight paddocks per pasture. On May 1, 1996, 36 cows were allotted to pastures on the basis of previous winter treatment. Four smooth brome-grass--orchardgrass--birdsfoot trefoil pastures were stocked with cow-calf pairs and stocker yearlings (year-round) at .75 animal units per acre. The remaining four smooth brome-grass--orchardgrass--birdsfoot trefoil pastures were initially stocked with cow-calf pairs (minimal land) at .64 animal units per acre. For the first 41 days of grazing both grazing systems were moved between paddocks daily to remove rapidly growing forage. Subsequently, cow-calf pairs of the minimal-land system were moved between paddocks on a five-day schedule. Cow-calf paired in the year-round system were moved on June 10 to four tall fescue--red clover or smooth brome-grass--red clover pastures, which had been utilized as winter stockpiled grazing due to lack of forage.

Table 1. Growing animal and hay production from year-round and minimal-land management systems.

	Year-round system ^a	Minimal-land system ^b
Calf gain lbs/day	2.57	2.63
lbs/acre	94.6	242
Yearling gain lbs/day		
winter	.49	.51
summer grazing	1.92	n/a
feedlot	4.14	4.05
lbs/acre	37.7	n/a
Growing animal lbs/acre grazing	132.3	242
Hay yield lbs DM/ac		
harvested acres	2269	2896
total system	1021	1086

^a Year-round system figured on 25 acres, 11.25 acres harvested for hay.

^b Minimal-land system figured on 10 acres, 3.75 acres harvested for hay.

One of four, 3.75-acre paddocks of the stockpiled pastures was strip stocked for 34 days until hay removal from the remaining 11.25 acres of the stockpiled pastures. After hay removal on July 1 cow-calf pairs were allowed access to all 15 acres until August 6, when they returned to the summer smooth bromegrass--orchardgrass--birdsfoot trefoil pastures. Meanwhile, yearling stockers remained on the summer smooth bromegrass--orchardgrass--birdsfoot trefoil pastures and were rotated between paddocks on a five-day schedule until August 6, when yearlings were sent to the feedlot for finishing. On August 6, all pastures were put on a rotational schedule based on sward height, for the remaining grazing system, to remove approximately 33% of the forage.

Cows were bred by natural service over a 60-day breeding season beginning June 8. Cows and calves were weighed and condition scored approximately every 28 days. To estimate forage yield and use, sward heights were measured with a falling plane meter (8.8 pounds per square yard) at two locations per paddock before cows were moved into a paddock and after cows were moved out of each paddock. Forage quantity and quality were determined by hand clipping a 388-square-inch area in twelve locations in every pasture every 28 days. Production of total amount of forage was determined by hand clipping two 388-square-inch locations outside and inside an enclosure at 28-day intervals. On June 28, hay was harvested as large round bales from 3.75 acres of the summer minimal land pastures and 11.75 acres of the winter stockpiled hay crop pastures. To determine hay yield all bales were weighed at harvest and six bales from each pasture were core-sampled in four locations.

Results

During the first 30 days of grazing no difference in live forage density was apparent, as estimated by sward heights, between year-round and minimal-land grazing system (Figure 1). Live forage densities differed during the time that year-round system cows grazed either tall fescue--red clover or smooth bromegrass--red clover winter stockpiled pastures, and minimal-land system cows received supplemental hay. Sward heights on stockpiled pastures increased during this time due to the strip-stocking management, allowing forage to reach maturity during mid-June and July. Forage densities of summer pastures stocked by yearlings on the year-round system or minimal-land system did not differ during the second 60 days of grazing. Hay yield in pounds per acre was affected by grazing system. The minimal-land system yielded more dry matter pounds per acre for harvested acres and total system (Table 1). Previous winter results involving winter drylot management of cows indicate that the amount of hay produced from the minimal-land system will be insufficient by approximately one ton.

During the first 30 days of grazing, cows on the minimal land compensated for lower body weights caused by the winter system (Figure 2). Grazing system had no effect on the monthly cow weight change after the first 30 days of grazing. No difference in cow body condition score was apparent between grazing systems. Both grazing systems caused cows to increase in body condition score throughout the summer (Figure 3). Cow rebreeding rate and calving interval were affected by grazing system with the minimal-land system having a lower rebreeding rate and longer calving interval.

Calf daily gain was not different between grazing system. Calf gain pounds per acre was significantly different due to the year-round system utilizing 25 acres whereas the minimal-land system utilized ten

acres (Table 1). Yearling daily gain during summer grazing was 1.92 pounds per day, resulting in 37.7 pounds per acre. Total grazing growing animal pounds per acre was affected by grazing system because of the greater number of acres utilized by the year-round grazing system.

Implications

Use of a larger land area allows for the incorporation of stocker yearlings to help maintain a desirable sward height, and increase the growing animal pounds per acre production. The larger areas allow for a greater flexibility in mid summer when forage growth may be reduced. Hay production by the minimal-land system may be inadequate for the winter management of cows to be maintained in a drylot. The shortfall in hay production will necessitate the addition of stored feeds into the system.

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