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Grazing: An Alternative to Haying Subirrigated Meadows in the Nebraska Sandhills

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Summary

Ninety-six cow/calf pairs were allotted to four grazing/feeding treatments. Treatments were defined by grazing/feeding management within two time periods: an early period (May 10 to June 10) and a late period (June 11 to July 25). Treatments were 1) early period grazing meadow and late period grazing range, 2) both early and late periods grazing meadow, 3) early period fed meadow hay and late period grazing meadow, and 4) early period fed meadow hay and late period grazing range. Effects on cow body weight, cow body condition score, subsequent calving date, and calf gains were tested. Calves grazing meadow during the early period gained an average of 15 lb more ($P < .01$) than calves from the hay-fed groups. Body condition score of cows grazing meadow had increased an average of .41 condition score units over cows fed hay by the end of the early period. This difference was still present at weaning. There were no differences among treatments during the late period. Cows which grazed meadow during the early period in '93 calved an average of 10 days earlier than those which were fed hay during the early period and then grazed native range.

Introduction

Subirrigated meadow in the Nebraska Sandhills are used extensively for hay production. Hay harvest takes place in late June through July, generally after

the forage has reached full maturity. Crude protein content of this hay commonly falls in the range of 6 to 8%. This is below the nutritional requirement of lactating cows that are often fed this hay until the native range is ready for grazing in late May/early June. Harvesting hay at an earlier maturity would improve its nutritive value, but is not an option on some meadows because much of the surface remains saturated well into the summer. Allowing cattle to graze subirrigated meadows during the growing season (which coincides with lactation in spring-calving herds) should result in higher growth rates and more rapid replenishment of body condition than would occur on marginal quality meadow hay. A few weeks of spring grazing might also delay meadow forage maturity enough that producers would have the option, once the meadows were dry, of taking hay from less mature stands (yielding higher quality but lower tonnage) or allowing the forage to complete its growth and harvest for tonnage rather than nutritional value. An early meadow grazing program could cut several weeks worth of hay out of the spring feeding program as well. Because of these things, meadow grazing might help increase ranch profitability in some situations.

Procedure

A 2-year study was initiated in 1993 to evaluate the effects of meadow grazing on cow-calf performance and forage production. This paper reports the cow-calf production results. The meadow trial was split into two time periods, an early grazing period (May 10 to June 10) and a late grazing period (June 11 to July 25). Ninety-six cow-calf pairs were stratified by cow age and randomly assigned to one of

four replicated grazing/feeding treatments (12 pairs/replicate) each spring. Treatments were: 1) early period grazing meadow and late period grazing range, 2) both early and late periods grazing meadow, 3) early period fed meadow hay and late period grazing meadow, and 4) early period fed meadow hay and late period grazing range. All treatments were replicated twice, using two separate meadows. Weights and body condition scores were taken May 10, June 10, July 25, and October 6. Bulls were placed with the cows as they were moved out to their late period pastures (June 10), and remained with them until July 25.

Both meadow and upland range pastures were grazed continuously through each grazing period, and pastures were grazed by the same treatment groups both years. Forage allowances on the meadow were adjusted according to the distribution of certain key plant communities through each pasture and the amount of growth anticipated in each plant community during the grazing period. Non-grazed sites dominated by smooth brome grass and intermediate wheatgrass produced approximately 3,800 lbs DM/acre in a season. Wetter sites dominated by sedges produced about 2,600 lb DM/acre, and areas having heavy stands of the small rush, produced nearly 1,400 lbs DM/acre in a season (May 10 through August 1). The forage allowance used provided for 816 lb forage dry matter for each cow-calf pair per month. The upland pastures provided for summer grazing were dominated by little bluestem, prairie sandreed, sand bluestem, and blue grama.

Results

The main treatment response occurred in association with early

meadow grazing. Calf gain and cow body condition score data are presented in Tables 1 and 2. Calves grazing meadow during the early period gained an average of 15 lb more than those in the hay lots ($P < .01$) and maintained this weight advantage through weaning in 1993, but not in 1994.

Cows grazing meadow during the early period gained an average of .41 condition score points over cows fed hay in the drylots ($P < .01$). They maintained this higher level of condition through weaning ($P < .01$) regardless of whether they remained on meadow or grazed range in the late period. The weight trends generally reflect the condition score data (Table 3).

Calving dates in 1994 were compared for cows on the '93 meadow trial (Table 4). Both early meadow groups calved an average of 8 days earlier than the hay-range group ($P < .01$). Data for the early hay-late meadow group had to be thrown out because of an unsound bull. Current-year calving data for the cows in the '94 meadow trial have not been analyzed yet.

This study has shown that meadow grazing during the first few weeks of meadow forage availability can improve cow body condition and calf gains over that of animals being fed marginal quality hay. The results also seem to indicate that gains in weight and condition may oftentimes carry over through weaning. Though these performance improvements are interesting, they alone are insufficient to make the case for Sandhills meadow grazing. Data pertaining to seasonal forage production and quality, hay production, and the relative costs of different forage management systems are being analyzed in order to explore how Sandhills meadows may be better used to increase ranch profitability and longevity.

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Table 1. Mean calf gains (lb) by period, for 1993 and 1994

	Early period	Late period	Summer range	Overall mean
Early meadow	62.5	112.1	143.4	318.5
Late range Early meadow	64.1	114.1	146.3	325.1
Late meadow Early hay	48.7	106.4	137.4	293.0
Late range SE	2.6	3.3	7.0	9.7

Table 2. Mean cow body condition score changes by period, for 1993 and 1994

	Early period	Late period	Summer range	Overall mean
Early meadow	+ .47	+ .33	- .02	+ .78
Late range Early meadow	+ .54	+ .32	+ .02	+ .89
Late meadow Early hay	+ .04	+ .20	+ .14	+ .38
Late meadow Early hay	+ .15	+ .39	- .11	+ .43
Late range SE	.083	.100	.096	.108

Table 3. Mean cow weight changes (lb) by period for 1993 and 1994

	Early period	Late period	Summer range	Overall mean
Early meadow	42.3	82.4	-32.4	92.5
Late range Early meadow	46.5	54.4	10.6	111.9
Late meadow Early hay	44.0	20.3	10.6	74.9
Late meadow Early hay	53.7	38.1	-17.2	74.4
Late meadow SE	8.6	0.1	7.3	8.8

Table 4. Average 1994 Julian calving dates for the 1993 study cows

Early meadow	Late range Early meadow	Late meadow Early hay	Late range	Early hay Late meadow	SE
—	89	88	97	NA	2.2