

Grazing Cattle on Sub-irrigated Meadows¹

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Highlight

Until recently it was thought that sub-irrigated meadow sites should not be grazed by livestock during the growing season but reserved for hay production. Only the very early spring growth or aftermath was grazed. Grazing cattle on sandhill meadows is a sound practice under proper management. The increased cost of making hay and the inflated values of land in the Sandhills suggest that ranchers should take a look at alternative land uses when planning their grazing-forage program.

The weight gains of cow-calf pairs grazing meadow pasture were compared with comparable cow-calf pairs grazing adjacent hill pastures four different years on the 47 Ranch² near Brownlee, Nebraska. (Fig. 1 and 2). In each trial cow-calf pairs were divided

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into two groups equal in cow age, calf age, and calf sex. The cows and calves were individually weighed before going on the pastures in May and again when coming off the pastures in the fall. They were sorted into the two groups coming off the scales in the spring and the two groups were reassembled the day before the fall weights were taken. This procedure equalized shrink conditions between the two groups.

The meadows were pastured one year and harvested for hay two years in a three year rotation. Thus, the meadow pastured in 1960 was also grazed in 1963 (Table 1). In 1961 two meadows were pastured using a rotation-within-season procedure. One of these meadows was grazed again in 1964.

By the end of the 2nd year of the study it was obvious that watering places were located so that one end of the hill pasture received most of the grazing pressure. Before the 1963 grazing season a cross fence was constructed and two watering places developed. The part of the pasture that received light use during 1960 and 1961 (about 418 acres) was used in the 1963 and 1964 trials. All hill pastures were grazed continuously through the season except in 1961, when livestock were moved to a fresh pasture in August.

The meadow used in 1960 and 1963 was about 25% sub-irrigated and wetland, 60% dry valley and 15% sand range sites. The combination of the two meadows used in 1961 was about 53% sub-irrigated and wetland, 18% dry valley and 29% sand range sites. The meadow used in 1964 was about 65% sub-irrigated and wetland and 35% dry valley. The hill pastures were on choppy and gently rolling sand range sites with some dry valley range site in the pastures grazed in 1960 and 1961. The hill pastures were in good to excellent range condition.

Forage Use

The sub-irrigated range site of the meadow pastures showed close and non-uniform use. Grazing patterns were often patchy. There are two reasons for this. One is the early establishment of grazing patterns that result from livestock preference for regrowth of grazed plants—the other is a development of grazing patterns from manure and urine contamination of forage. The wetland portion of the meadow was virtually unused. Vegetation of this area consisted mostly of sedges and rushes. This area was mowed late in the season to remove excess forage. The upland portion of the meadow pastures showed moderate to full use of forage.



FIGURE 1. Cows and calves produce well when grazed on sub-irrigated meadow pasture.



FIGURE 2. The meadow pasture can be seen in the background between the trees. The hill pasture is in the foreground.

Apparently correct use of meadow pastures was obtained with a stocking rate of 3 acres per cow-calf pair for 5 months. In 1963 when 3.6 acres were grazed by a cow-calf pair for 5 months, 50 tons of hay were harvested in addition to the forage removed by grazing. In 1964, at a stocking rate of 2 acres per pair, the experiment had to be ended by the first of September. Had it been continued until October, over-grazing would have occurred. Sub-normal precipitation also reduced the amount of forage available for grazing in 1964.

Lack of uniform grazing was obvious on the hill pastures. The closely grazed portions were in areas surrounding the watering places. The portions farthest from the watering places showed slight to light use. It appears that 7 to 8 acres per cow-calf pair is an optimum stocking rate for summer grazing hill pastures in good to excellent condition in the 19 to 20-inch rainfall area of the Sandhills. In 1960 under a stocking rate of 12 acres per cow-calf pair, 150 animal-unit-months of grazing were obtained from the hill pasture after the experiment was terminated.

Cattle Performance

Cows grazing the meadow gained more weight than those grazing the hills each year (Table 1). In 1961 the difference between the gains of cows on the meadow and those on the hill was the smallest (187 vs. 174 lb). This was also the year that calves from the hill pasture were heavier than those grazing the meadows. The cows and calves on the hill pasture were moved to a fresh pasture in August 1961. The fresh pasture probably pre-

Table 1. Average gains of livestock when grazed on sub-irrigated meadows and sandhill pastures.

	1960		1961		1963		1964	
	Mead.	Hill	Mead.	Hill	Mead.	Hill	Mead.	Hill
Days grazing	148		168		158		100	
Pasture size, acres	186	720	299	840	186	418	103	418
Cow-calf pairs	62	60	107	120	50	51	51	51
Stocking rates								
Acres/A.U. ^a	3.0	12.0	2.8	7.0	3.7	8.2	2.0	8.2
Acres/A.U.M. ^a	0.62	2.47	0.51	1.27	0.71	1.58	0.61	2.51
A.U.M./acre	1.61	0.40	1.96	0.79	1.41	0.63	1.64	0.40
A.U.M. of grazing	299	288	586	664	262	263	169	167
A.U.M. grazing left	150	100
Ave: gains, lb								
Total								
Cows	191	151	187	174	215	163	154	131
Calves	272	266	257	261	295	278	201	194
Daily								
Cows	1.29	1.02	1.11	1.04	1.36	1.03	1.54	1.31
Calves	1.84	1.80	1.53	1.55	1.87	1.76	2.01	1.94
Per acre	154	35 ^b	159	62	138 ^b	54	178	40

^aA.U. in this data is one cow-calf pair. A.U.M. in this data is one cow-calf pair for one month.

^bThis figure underestimates the gains per acre because of forage left after the grazing season.

vented the decline in weight gains generally experienced by cattle grazing continuously on hill pasture. It suggests there may be an advantage to using a deferred-rotation grazing system for obtaining optimum livestock gains.

Discussion

The vegetation of the meadows was closely checked during the study. No deterioration of range condition or productivity occurred under the system of management used during the study. Considering this, together with the favorable livestock response, meadow grazing is considered a sound practice.

By grazing meadows every third year and producing hay the other two years, a rancher could graze as much as one-third of his present hay land each year. The grazing of meadows in any two consecutive years is not recommended.

Yearling cattle to be marketed in the fall would be the best class of livestock to graze meadows. Cows that normally would be fed hay from the meadows can graze during early winter on the pastures that would have been summer-grazed by the yearlings. It may mean the cows would need somewhat more protein or concentrate supplement. Because the cow's nutrient requirements through most of the winter are essentially for maintenance, they can do well with a minimum of hay if adequate forage for winter grazing is available.

Management of sub-irrigated meadows for grazing as well as hay production includes the introduction of red and alsike clover when they are not present in the stand. It also requires application of 20 to 25 lb of elemental phosphorus every fourth year to insure satisfactory growth of legumes.