

A Comparison of Four Native Bluestem Pastures, 1961-62 (Project 253-4).

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This test compares steer weight gains on four bluestem pastures to determine whether differences among the pastures might influence steer performance. Other than being in different pastures, all steers were treated and fed alike. The supplemental feed during the winter period was offered free choice and depended on either salt or urea or a combination of the two to limit consumption to under 2 pounds of supplemental feed per steer daily. Only salt was supplied during the summer.

Yearling Hereford steers with an average USDA feeder grade of about high good were used. The steers came from near Thermopolis, Wyoming, were received at the Kansas station in March, 1961, and were used in summer grazing studies preceding this test.

All weights were after an overnight stand in drylot without feed or water.

The following 60-acre bluestem pastures were used in the test.

Pasture 7A. A hilltop bluestem pasture typical of many Flint Hills pastures with a large proportion of big and little bluestem and Indian grass with very few trees, and very little winter protection. A road is in this pasture. Water was supplied by an automatic waterer, heated in winter.

Pasture 7B. A hilltop bluestem pasture with more northern slopes than pasture 7A and a moderate-size timbered draw through it running north and south. This pasture is west and north of pasture 7A with similar vegetation, but perhaps slightly more cool-season grasses, such as Kentucky bluegrass, than 7A has. Steers in 7A and 7B received water from the same automatic waterer.

Pasture 13. This was primarily a bottomland pasture with a timbered creek running its entire length east and west and offering a source of open spring-fed water all winter and summer. The vegetation was similar to that in the other pastures, but a larger proportion of cool-season grasses (winter annuals and Kentucky bluegrass) was present.

Pasture 15. This pasture was a combination of hilltops and lowland areas, sloping primarily south. The vegetation was very similar to 7B and perhaps 7A. Two draws crossed the pasture, one running north and south, the other running south and east with a few trees along it. Water was supplied by an automatic waterer, heated in winter.

None of the pastures had been burned for about 10 years. Grass was abundant in all pastures.

Observations

Results are reported in Tables 7 and 8. (Table 8 on page 26)

The steers in all pastures lost weight during winter; largest weight losses in all pastures occurred during March. Performance of the steers in Pastures 13 and 15 during winter was superior to that of the steers in Pastures 7A and 7B. Gains during April seemed to account for most of the difference.

Only small differences in gain occurred during summer. The largest yearly gain was obtained in Pasture 13.

Table 7  
A comparison of four native bluestem pastures.  
Wintering—December 5, 1961, to May 1, 1962—147 days.<sup>1</sup>

Pasture no. ....	7A	7B	13	15
No. steers .....	10	10	10	10
Initial wt., lbs. ....	581	594	591	592
Gain per steer, lbs. ....	-36	-46	-14*	-13*
Daily gain per steer, lbs. ....	-0.25	-0.31	-0.10	-0.09
Daily ration per steer, self-fed: <sup>2</sup>				
Salt, lbs. ....	.271	.220	.208	.297
Urea, lbs. ....	.158	.150	.154	.150
Dicalcium phosphate, lbs. ....	.047	.045	.045	.047
Defluorinated phos., lbs. ....	.028	.028	.026	.026
Phenothiazine, lbs. ....	.007	.006	.006	.006
Dehydrated alfalfa, lbs. ....	.056	.056	.052	.052
Soybean oil meal, lbs. ....	.317	.317	.303	.310
Ground sorghum grain, lbs. ....	.881	.831	.872	.846
Total .....	1.765	1.663	1.670	1.734
Bluestem pasture .....	Free choice			
	Grazing—May 1, 1962, to November 1, 1962—184 days.			
Initial wt., lbs. ....	545	548	577	579
Gain per steer, lbs. ....	288	319	311	299
Daily gain per steer, lbs. ....	1.57	1.73	1.69	1.63
	Summary—December 5, 1961, to November 1, 1962—331 days.			
Final wt., lbs. ....	833	867	888	878
Gain per steer, lbs. ....	252	273	297	286
Daily gain per steer, lbs. ....	0.76	0.83	0.90	0.86

\* Gains significantly different from those in Pastures 7A and 7B, .05 level of significance.

1. This was the total wintering period, but supplement was added to the ration December 13, so the daily ration is figured on 138 days.

2. Five different mixtures were offered free choice to the steers: a 20% salt, 5% urea, 5% dicalcium phosphate, 30% soybean oil meal, and 40% sorghum grain mixture were fed the first 17 days; a 10% salt, 12% urea, 5% defluorinated phosphorus, 10% soybean oil meal, 10% dehydrated alfalfa, and 53% sorghum grain the next 13 days; a 5% salt, 12% urea, 5% defluorinated phosphorus, 30% soybean oil meal, 10% dehydrated alfalfa, and 38% sorghum grain the next 28 days; a 5% salt, 12% urea, 5% dicalcium phosphate, and 78% sorghum grain the next 35 days; a 5% salt, 12% urea, 82.6% sorghum grain, and .4% phenothiazine the last 15 days. Additional salt was added in some instances to control consumption.

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Table 8  
Monthly gain (pounds per head) of steers on four native bluestem pastures,  
December 5, 1961, to November 1, 1962—331 days.

Lot no.	7A		7B		7C		7D	
	Monthly gain	Accumulative gain	Monthly gain	Accumulative gain	Monthly gain	Accumulative gain	Monthly gain	Accumulative gain
December	5	5	-22	-22	-4	-4	-4	-4
January	-10	-5	-12	-34	-17	-21	-8	-12
February	-14	-19	9	-25	3	-18	7	-5
March	-27	-46	-39	-64	-19	-40	-42	-47
April	10	-36	18	-46	26	-14	34	-13
May	107	71	120	74	127	113	115	102
June	52	123	39	113	32	145	32	184
July	64	187	58	171	74	219	73	207
August	52	239	64	235	36	255	42	249
September	42	281	23	258	41	299	50	299
October	-29	252	15	273	-2	297	-13	286

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Different Methods of Managing Bluestem Pastures, 1962 (Projects 253-3 and 253-5).

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This experiment was designed to determine the effect of different stocking rates, of deferred grazing, and of pasture burning on cattle performance, productivity of pastures, and range condition as determined by plant population changes. In addition to the yearly report, a summary of cattle gains for the past 13 years of the study is included.

Experimental Procedure

Yearling Hereford steers with an average USDA feeder grade of about high good were used in 1962. The steers came from near Fort Davis, Texas, and were wintered at the Manhattan Station on prairie hay and alfalfa hay the winter preceding the grazing season. Due to a shortage of yearlings to stock the pastures, some two-year-old steers were assigned to each pasture to increase the stocking rate. Their weight gains are not reported.

The experimental treatment for each pasture was:

Pasture 1. Moderate stocking rate, 3.3 acres per steer.

Pasture 2. Overstocked, 1.8 acres per steer.

Pasture 3. Understocked, 4.6 acres per steer.

Pastures 4, 5, and 6. Deferred grazing at the moderate stocking rate, 3.3 acres per steer. The steers were grazed on Pastures 5 and 6 from May 2 to July 2. They were then moved to Pasture 4 where they remained until September 15, when all were allowed to graze in all three pastures until October 3, close of trial.

Pasture 9. Burned March 19, 1962, moderate rate of stocking.

Pasture 10. Burned April 10, 1962, moderate rate of stocking.

Pasture 11. Burned May 2, 1962, moderate rate of stocking.

The steers were gathered about 2 p.m., held over night without feed or water and weighed the following morning, about 8 a.m. The starting and final weights were obtained after putting all the steers together and weighing them in random order.

Observations

The results are reported in Tables 9, 10, and 11.

Steer gains appeared to be lowered by all treatments, especially deferred grazing and overstocking. This is the second consecutive year and the only two years when the weight gain on the nonburned Pasture 1 exceeded the gain made by steers on the mid- and late-spring-burned pastures. Forage was sufficient only on Pasture 9 among the burned pastures to permit the entire pasture to be burned. This is two consecutive years the entire early-spring-burned pasture has burned. Only about three fourths of the mid-spring-burned pasture burned and very little of the late-spring-burned pasture was burned; only on the slopes was there sufficient forage to permit burning; new growth was apparent on over half of the pasture by May 2, which hampered burning where little old growth was available to carry the fire.

Yields of vegetation were approximately equal to those of the previous year, but range condition has declined slightly under burning and heavy grazing. This appears to contribute to the somewhat lower yields of beef under those treatments.